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RURAL
SANITARY ADMINISTRATION
IN
PENNSYLVANIA.

READ IN ABSTRACT BEFORE THE ANNUAL MEETING
OF THE ASSOCIATED HEALTH AUTHORITIES
AND SANITARIANS OF PENNSYLVANIA,
AT MECHANICSBURG.

EXTRACTED FROM THE SEVENTEENTH ANNUAL REPORT OF THE STATE
BOARD OF HEALTH OF PENNSYLVANIA.

WM. STANLEY RAY,
STATE PRINTER OF PENNSYLVANIA.
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RURAL SANITARY ADMINISTRATION IN PENNSYLVANIA—READ IN ABSTRACT BEFORE THE STATE ASSOCIATED HEALTH AUTHORITIES AND SANITARIANS OF PENNSYLVANIA, AT HARRISBURG.

By William H. Allen, Ph. D.

CHAPTER I.

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 - (1) Building materials improve.
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- (b) To devise blanks and forms to facilitate collection and dissemination of facts.
- (c) To recommend necessary changes in registration to Legislature.

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- (c) Disseminate information.
- (d) Institute sanitary inspection of public institutions.
- (e) Codify and suggest amendments to the existing sanitary laws.

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- (b) To do the work of local boards where none exist.
- (c) To displace inoperative boards.
- (d) To see that quarantine regulations are everywhere enforced.
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 - (a) Establishment of district and county statisticians responsible to central statistician.
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THE EVOLUTION OF PUBLIC SANITATION.

The triumphs of sanitary reform, as well as of medicine, are perhaps the brightest page in the history of the nineteenth century. This is the judgment of the historian, Lecky, who writes from a country where medicine is given a political status and sanitation is regarded as belonging to the social, economic and political sciences. It is not the discovery of vaccine lymph, or antitoxin but their administrative utilization to which we owe the conquest of small-pox and diphtheria. It is not laboratory medicine of which the historian speaks, but state medicine. The great sanitarian must be statesman as well as scientist. Only when medicine is servant to statecraft does it deserve the encomiums of the historian.

Unfortunately there is the tendency in America to regard sanitation as a problem for the exclusive study of the medical profession. The bacteriological laboratory and its achievements would seem to make the physician the special guardian of public health, as he is in fact the most competent possible agent which the State can employ. State Legislatures and town councils establish health boards and enact sanitary codes after which physicians are expected to monopolize both interest in health problems and responsibility for their solution. Public health committees, whether in local, state or national deliberative bodies, are for the most part still regarded as mere checks upon the vagaries of sanitary enthusiasts. Rarely do such committees presume to outline a general health policy.

There is danger in this excessive specialization by which the protection of public health is delegated to the few who happen to have special and technical knowledge of universally known facts. It should be remembered that the natural and most substantial basis for sanitation is that which antedated Darwin and the biological laboratory. The most fundamental and effective motives to cleanliness have ever been aesthetic, economic and social. The essential remedies for filth and overcrowding and the evils they generate likewise lie outside the field of medical science. The most effectual utilization of the discoveries of Jenner, Koch, Yersin, et al., depends upon the Legislatures and the administrative organs which execute their will. Sanitary progress depends upon society's appreciation of health, not upon technical knowledge of disease.

It is the object of the present paper to sketch the progressive steps from aesthetic or economic measures, which incidentally protected health, to the existing systematic administration of hygienic laws.

The scientific application of biology and medicine in the interest of public health dates back less than half a century. As successive steps to this era of public sanitation for the public we may mention six stages, in all of which measures were dictated by the culture and economic interests of the favored classes.

First. The period of racial tutelage, when the fundamental lessons of personal hygiene were taught by the process of natural selection.

Second. The period of aesthetic or comfort sanitation, street paving, sewerage, waterworks and baths.

Third. Commercial sanitation, the era of quarantine protection against imported plagues, and street care in the interests of guild commerce.

Fourth. The period of nuisance abatement and the evolution of a code to insure the leisure class against annoyance.

Fifth. Leisure class sanitation for the protection of the upper class against the filth and disease of city slums.

Sixth. Philanthropic sanitation in the interests of the submerged classes.

The final stage we are now entering, that of democratic sanitation when the whole State unites without distinction as to class in legislating against conditions which breed disease or lessen man's vitality. Before the advancing claims of public health, social and political theories have completely broken down in England and are gradually crumbling in the United States. Health considerations are fast becoming paramount to any theory of personal or property rights. The graver problems of the future will be practical rather than theoretical. The solution will be found in gradual changes of administrative machinery to meet the needs of progressive standards as revealed in legislation and in medical discoveries. Having traced the development of the theory of sanitation, we shall note the evolution of administrative methods as experienced during the past half century.

Animal life in its earliest stages was compelled in its quest for food to observe the elementary laws of personal hygiene. By the distribution of plant life, of heat and moisture, primitive man was forced to enjoy pure air, pure water and pure soil. In his conflict with nature he learned to shun certain plants as poisonous, as well as to reject discolored water. But when gregarious man settled in confined limits for definite and prolonged periods inanimate nature no longer performed the work of scavenger and educator. Conscious modifications of conditions must be followed by conscious adaptation; sanitation must become conscious and receive the sanction of law.

Camp life taught the nomad to bury the dead, to remove or bury offal and to protect the drinking water. Community life taught

further lessons. Changes in mode of living revealed the dangers lurking in customs and habits which had been healthful enough in roaming life. How costly these lessons were, may be judged from the stringency of the codes regulating water supplies, burials, marriages and foods, which obtain to this day among the Hindoos and Hebrews. It is significant that the earliest health legislation, whether in Israel, Greece, Rome, India or Egypt, came from Heaven and carried with it the highest sanction known to men. This is common to religions of all ages—physical laws discovered by groupal existence gradually become moral principles. At the present time for instance are we not tending to develop moral standards with regard to spitting in public places, as we have succeeded in establishing the immorality of drunkenness?

The golden ages of Greece and Rome are frequently cited as periods of state activity in protecting health. It is not certain that Greece developed a system of sanitary administration apart from the religious worship of Hygeia, but it is known that much attention was paid to theories of physical development. Aristotle declares that the "art of procuring health is as important to the statesman as the art of procuring subsistence and accommodation, for both alike pertain to economy, political as well as domestic."* The ideal state would select a healthful location for the Capitol with a view to securing pure air and pure water. Aristotle regrets that the ideas of Hippodamus, the sanitary architect, cannot be introduced, since the exigencies of defense render inadvisable wide, straight streets for all citizens.

In Rome the emperors appointed regularly, general, as well as local, health officers. Principal among these officers was the water commissioner whose duties, "contributing partly to the convenience, partly to the health, even to the safety of the city, were from the olden time exercised by the most distinguished citizens.†" The first aqueduct was introduced in 313 B. C. By 97 A. D., there were nine aqueducts with two hundred forty-seven delivery tanks within the city, supplying thirty-eight gallons per day per capita. The water which flowed so freely also flushed the great sewer—cloaca maxima. The purity of the water supply was protected by law, just as the remaining springs were protected by religious sanctions. "Should any one pollute the waters his fine shall be ten thousand sesterii."‡ Inspectors in uniform were constantly patrolling the districts and guarding the reservoirs, six of which were covered.

Following the example of Carthage, Rome likewise paved her streets.§ By means of sewers and pavements, swampy lands and un-

*Politics, Book IV.

†Frontinus-Herschel, 1899. The Water Supply of the City of Rome.

‡About \$292 of coin. See Frontinus, p. 67.

§Christopher C. Cox, LL. D. American Public Health Association Proceedings, 1872, p. 522.

tenantable soils were drained and afterwards became the site of some of Rome's noblest structures. The great Coliseum stands to-day a monument to the sanitary drainage of ancient Rome.

It must not be overlooked that the sanitary achievements of Carthage and Rome were not due to an interest in public health. Their public works, as indeed most of those of the modern city, such as water-works, sewers and pavements, are primarily evidences of advancing standards of comfort or concessions to a growing aesthetic sensitiveness. Constructed by the few to gratify their taste for cleanliness, ease or show, the benefits accrue to society, both poor and rich alike. To the patrician, revelling in the possession of oriental loot, a place was necessary where he might parade the evidence of his prowess. The promenade must not remain impassable after every shower, therefore the streets were paved. The streets were cleaned because dirt and splendor, filthy passages and sweeping gold-braided togas, were incompatible. Compared with the perfumes of the East and the sweetness of olive oil, the exhalations from the human body were obnoxious. Frequent appearance in the baths where such a refinement of luxury existed "that our feet may not tread anything but precious stones" was indispensable to the maintenance of social standing.* Rome was flooded with water for the same reason that the great wind-swept avenues of our modern cities are cleaned three times as often as the narrow, sweltering, disease-breeding streets and alleys. The higher standard of life of the leisure class has always been the chief motive to sanitary improvements for the non-leisure class.

In the days of culture's eclipse, "when teutonic Europe was sleeping off the effect of its great debauch," the cities of Italy lost their fundamental motive to sanitary improvement. Furthermore, the two dominant ideals of mediaeval Europe were direct obstacles to sanitary advancement. Holy Hieronymus, the monastic corporation and the feudal lord combined to undo the sanitary progress made during centuries of slow adaptation to environment. The ascetic violated all the laws of personal hygiene, the monastery's ideal was inconsistent with public hygiene, and both glorified God in teaching submission to the pestilence. The feudal lord on his part thought first of the exigencies of defense and constructed his castle with a view of herding together hosts of fighting warriors. The glorious deeds of the days of chivalry were achieved amidst unsanitary conditions to which no beast of the field has ever been inured.

The streets of the German towns were so filthy with the accumulations of years that high overboots must be worn in all seasons out

*See Frontinus. P. 266.

Pure and plenteous water became a part of the Roman standard of life, which went with the conquerors to other portions of the globe. In the British Museum to-day are numerous pieces of aqueducts laid on British soil—an example which the English city was slow to follow. Even London did not introduce a public water supply until 1594-1605.

of doors.* In 1148, Phillip Augustus ordered the drainage of the stagnant pest holes about Paris, fumes from which annoyed the inmates of the palace. Butchers were in the habit of pouring upon the streets the blood and offal from swine and cattle, fish cleanings followed while housewives and citizens contributed to the nuisance.† In London similar conditions prevailed.‡ The whole city was in a most unhealthy state; the water supply was poisonous in the extreme and the houses were overcrowded. "While in the provinces conditions bred chronic typhoid in the towns. The undrained neglected soil, the shallow, stagnant waters which lay upon the surface of the ground; the narrow unhealthy homes of all classes of the people; the filthy, neglected streets; the insufficient and unwholesome food...left little chance of recovery when stricken with the pestilence."§

Europe made most bitter atonement for these filthy conditions. There were ravaging epidemics in the year A. D. 550, 1000, 1345-1350, 1485, 1528, 1665, while the minor so-called filth-diseases were ever present. The death roll reported for the Black Death (1345-1350) numbers millions. China is said to have lost 13,000,000; Paris, 50,000; London, 100,000; Venice a like number, while the Franciscan Friars in Germany lost 125,000.|| Lamprecht says these epidemics "were largely due to filth, but the superstition of the people attributed them to other causes."** The depositories of the world's knowledge prevented Christian Europe from learning the lessons which blind followers of instinct, untutored and wild, would have learned from these disasters, and thus filth became the medium of "dispensations of Providence."

But however welcome these evidences of divine wrath may have been to the zealot, they entailed insufferable losses upon those classes of society which, in the breaking up of feudal institutions, stepped into the dominant position. I refer to the mercantile interests. By a strange coincidence the first quarantine on the Mediterranean and the first regular street cleaning in Germany date from the same year, 1348; the former in the foremost maritime city, Venice; the latter in the dominant guild town, Cologne. Thus at the same time, the commercial classes began a reaction against the prevailing theory of the providential origin of plagues and the everlasting filth of the mediæval city.

A well defined philosophy soon arose to justify protection to commerce and garments. Erasmus voiced the new doctrines when he repudiated the Divine Origin of the Sweating Sickness in 1485 to

*Lamprecht, *Deutsche Geschichte*. IV. Pp. 225-226.

†Pozier, *La Question Sanitaire*. Paris, 1895. P. 34.

‡Cunningham, *Growth of English Industry and Commerce*. P. 173 ff.

§Cunningham. See Bosanquet, *Standard of Life*. P. 33 ff.

||Chambers, *Sanitary Economy*. P. 42.

***Deutsche Geschichte*, IV. Pp. 225-226, *Ibid*.

1518, and attributed it to the uncleanly habits of the English and the poor ventilation of their houses. More's Utopia was to be a land where the first consideration was cleanliness and health. Slaughtering was to be done outside of towns, as many guild towns had already ordained.* No foul or unclean thing was to infect the air by ill smells, while public hospitals were to provide for the isolation of infectious cases, as imported cases were then being treated among the Mediterranean cities.

The theory of the filth origin of disease did not of itself stimulate to radical remedial measures. Its greatest contribution is to be found in the development of the nuisance law as found in judicial interpretation. Bracton and Glenville had formulated the principle that any act is a nuisance which in its consequences must necessarily tend to the prejudice of one's neighbor. For special damage the injured party might bring action, while for a danger shared with the public, indictment was the remedy. The damage need not be to the property itself. If the use of the property was rendered disagreeable by a stench from adjacent property, the courts would regard as a nuisance the cause of the stench.†

By the time of James I and of the granting of colonial charters any corruption of air or water was regarded as a nuisance. It was customary to grant to municipal corporations general powers to abate nuisances. By the time of Blackstone the definition had widened and cases had multiplied, so that he mentions certain definite nuisances; obnoxious animals, offensive trades, corrupting water courses, corrupting the air, whether by positive acts or by omission to abate nuisance.‡ To these earlier definitions of nuisance we have added little. We cannot now go further than the principle then enunciated: "So use your own, that you will not injure another." But the early law so generally stated was of little consequence, because there was so low a standard of cleanliness that only the most atrocious nuisances met with any opposition before legal tribunals. The definition, however, has proved a valuable help in the later days when a rising standard of living and the discoveries of science have multiplied the objects or acts which may be brought within the category of nuisances.

The seventeenth and eighteenth centuries were, thanks to increasing social differentiation, periods of great progress in personal hygiene and public cleanliness. The court and its circle indulged in extravagance of dress and buildings. The merchant class imitated royalty and displayed itself in fine raiment and spacious houses. In the interests of the palace and the mansion as in ancient Rome, streets were

*See Davies, Rev. J. S., *A History of Southampton*, London, 1883. P. 145.

†Reeves, *History of English Law*. II. P. 115-142.

‡Blackstone-Sharswood. III. P. 216 ff. IV. P. 166. Cunningham, p. 174, from James Foedera,

cleaned, paved and sewered, waterworks were introduced, building laws* enacted, and quarantine† erected and systematically conducted for protection against infection from abroad.

The last decade of the eighteenth century marks a turning point in the history of sanitation. England, Belgium, France, Prussia and the United States definitely recognized quarantine as a matter of state rather than of local concern.‡ France alone accepted the principle enunciated by Montesquieu that the State "owes to every citizen a kind of life not incompatible with health" and between 1789 and 1842, passed 747 sanitary acts. Of these 122 were enacted from 1789-1800. Moreover the continental countries in the beginning of the nineteenth century established central health boards for protection against home as well as foreign diseases. In England and the United States this last step was delayed until after the middle of the century.

The transition from the simple nuisance and maritime quarantine laws of the early part of the century to the present systematic scientific search for conditions prejudicial to health, was precipitated by the English press and novelists. The same leisure class standards which demanded paved streets, sewers, hydrants and pest houses now began to rebel against the filth and squalor and disease of the crowded and less fortunate portions of great cities. Dickens revealed the abuses in the schools and tenements, Reade exposed prison outrages, decennial epidemics of cholera uncovered the slums where the poor law commission of 1832 saw sights disgraceful to a Christian land. The commission on the State of Health in Large Towns reported in 1842 that the English language did not contain words to picture the filthy condition of the overcrowded portions of the great towns. Life tables invented in 1834, revealed an alarming death rate and consequent waste of life capital. Parliament was urged to enact laws which should give the State and municipalities power to correct these sanitary evils, the former to be responsible for the latter's performance of sanitary duties.

The proposition met with much opposition.§ It was said to be unnecessary because the common law gave all requisite power. The advocates of local self government resented any interference in local affairs as "un-English and unconstitutional," "savoring of Cromwellism," "like a Russian ukase," calculated to deprive "local authorities of the independent conduct and action which was the glory of our Anglo-Saxon institutions and like rickety children place them in the go-cart of central government." To this opposition was added

*See Montesquieu *Esprit des Lois* +VI 2.

†Cunningham. P. 72 ff.

‡Palmberg-Newsholme, *Public Health and its Application*. United States Statutes at Large, I. 1796, Chap. +XXI, 1799; III, 619. For compilation of State laws see Report National Board of Health, 1899.

§For debate see Hansard, 98: 690: 715 ff.

the clamor of the individualist, who protested against governmental interference with "bad drainage, overflowing cesspools, festering grave yards, impure water, filthiness and humidity of low lodging houses," which were effective means of eliminating the less fit.†

In answer to these arguments it was shown that the common law did not provide machinery for exercising the powers it defined. Municipalities showed that they were not availing themselves of the powers granted in general charter provisions to abate nuisances. There was no more danger in the centralization which prevented than that, universally justified, which controlled emergency conditions.‡ Precedent was found in the beneficial results of central responsibility for the condition of gaols, factories and schools.§

But in Britain, as in America, public sentiment demands not only proof of its expediency, but also justification of the fundamental principle involved in a specific public policy. Herbert Spencer's theoretical vexations must be met theoretically. In reply to his charge of class legislation and class persecution, it was proved that this was not State taxation of the rich for the benefit of the poor. On the contrary it was a social tax for the good of society and directly for the comfort, enjoyment, security and peace of the rich, whose health was menaced and whose wealth was rendered less serviceable and less enjoyable because of the known presence of filth, disease, poverty and crime. It was not a foe to progress because the tests of individualism under healthful conditions are more vigorous and more numerous than where filth abounds, just as economic competition is stimulated, not diminished by fire and police protection and provisions against dangerous construction.

Herbert Spencer was shown to be inconsistent. He could not logically condemn sanitary protection when he advocated police regulations, for as Mr. Huxley later stated the rebuttal: "If my next door neighbor chooses to have his drains in such a state as to create a poisonous atmosphere, which I breathe at the risk of typhoid and diphtheria, he restricts my just freedom to live just as much as if he went about with a pistol threatening my life." Instead of being an interference with natural evolution, State sanitation was but its fruition. It would guaranty a process of selection which would eliminate the less fit without jeopardizing industry and commerce and the enjoyment of income.

The measure was favored by both parties and opposed only by the few who had some special interest such as smokestacks, factories or unsanitary dwellings for rent, or perhaps a pet theory to defend. Laborers were specially active in promoting the bill, numer-

†Herbert Spencer, *Social Statics*. P. 200.

‡Parliament had repeatedly enacted regulations in time of epidemics of cholera and yellow fever.

§Earl of Lincoln. *Hansard* 98: 690.

ous petitions came up from unions, while pamphlets and books* pictured model towns to add to the enthusiasm for the measure. Spencer had been answered also to the satisfaction of those members of society who were generally able to buy comfort and health.

To those who objected to the expense it was stated that preventable disease cost the United Kingdom every year not less than \$115,000,000 and inestimable loss of vitality. Health administration would be cheaper and less obstructive to commerce than such epidemics as the cholera epidemics of 1831 and 1847. Labor would earn more for its employer and keep more itself. Every class of society must benefit by the passage of the public health act.

The act passed after two years of consideration and a control board of health with limited powers was established. The great gain to England and the world was the establishment of the principle that the state is responsible for sanitary conditions throughout its entire area and is under obligations to see that health laws are everywhere properly executed in the interests of the State at large. From that time to this the question has been not whether central governments should act but how they could act most effectively.

English agitation was echoed in the United States just as the epidemics of cholera had passed from one to the other. The reports of the various English commissions were read and discussed in American city councils and in editorial columns. Sanitary investigations were instituted and the beginning was made of factory legislation. Vaccination was made gratuitous, water more generally introduced into the larger towns, city boards of health and vital statistics were given more extensive powers and provision was made for the isolation of such infectious diseases as diphtheria and scarlet fever. It is probable that thorough-going, general reforms would have closely followed the English act of 1848 had not the slavery issue monopolized the attention of those same classes who might have been expected to urge state assumption of sanitary duties.† The civil war proved to be the greatest object lesson the world ever had in the inevitable consequence of neglecting sanitary precautions. During the four years about 200,000 soldiers died from disease by far the largest part of the cases being preventable disease—or twice the number who were killed in battle or died of wounds, injuries or accident.‡ While the nature of infection was not so well understood as now, it was thoroughly demonstrated that filth in water, food or soil, facilitates infection. The most effectual remedy, as proved by General Butler, was thorough-going cleansing of camps and cities,§ together with the isolation of diseased persons.

*Buckingham, *Model Town*, 1849.

†See act 1851, Pennsylvania, following.

‡Sternberg, *Lessons of Spanish-American War*.

§See Reports of United States Sanitary Commission.

Close upon the war with its sanitary lessons came a period of sanitary education, agitation and organization. Local epidemics contributed to the educational movement and stimulated states to establish boards of health, and these in turn persuaded localities to appoint health officers. Statistics were gathered, compiled and gratuitously distributed with the avowed purpose of proving the expensiveness of disease and the economy of applying continuously preventive hygienic remedies. The authorities were buoyed up as well as incited to activity by the voluntary district, state and national health associations and their journals. The philanthropist, the reformer, the club woman and the society leader came to identify themselves with these voluntary associations, thus bringing the pressure of leisure class standards to bear upon the administrative officer. Due to the activities of this influential element, health officers were early protected, for the most part, from arbitrary removal by each succeeding mayor or governor. Finally the associations prosecuted their educational campaign by means of magazines, by forcing into school curricula instruction throughout the grades in the physiological laws of health, and by encouraging newspapers to report their meetings, abstract the papers and print photographs, thus recognizing the social value of their contributions to the community.

The period from 1866 to 1890 was one of extensive sanitary legislation throughout the world. Everywhere local, district and commonwealth boards were established and elaborate codes granting powers were enacted. In Great Britain a board was erected over every acre of land while river, factory and mine commissions were established. Over all was the Local Government Board with extensive powers. In the United States thirty-four states established central boards of health, while Congress created a national board with extensive powers. Cities of populations over 20,000 came to recognize health officers as a commonplace necessity, while even smaller cities and boroughs recognized the theoretical need by passing health ordinances and giving their constables or officers the extra honorary title sanitary police.

The general tendency of the enactments of this period was to increase the discretionary powers of health authorities, most of the acts being advisory or permissive rather than mandatory. Towns might adopt elaborate building regulations, hospitals might be erected with city funds, private houses were made subject to sanitary inspection, school authorities or councils were given the right to enforce a compulsory vaccination requirement, parks and public baths might be constructed, tenements condemned, impure food confiscated, infected persons isolated, notification of decease required without recompense and penalties imposed if the local authorities

should choose to prescribe such methods of protecting public health. The judge of the requirements of any community was to be the local council. The State merely delegated powers to such communities as desired to protect themselves against disease.

The large cities, such as Manchester, Birmingham, St. Petersburg, Rome, New York, Boston, Philadelphia, Chicago and San Francisco, developed a complicated administrative machinery. Instead of a sanitary police acting in emergencies under the orders of the mayor or city council, the sanitary staff was organized under a separate bureau, constantly active, employing tens and hundreds of experts and expending hundreds of thousands of dollars. For instance, Philadelphia has a Bureau of Health consisting of three members, a chief medical officer, twenty assistants and 250 volunteer deputies, for school inspection; a chief inspector of nuisances with fifteen assistants; thirty-six vaccine physicians; seventy-five other officers, including milk inspectors, disinfectors and house-drainage inspectors. Philadelphia also benefits from sanitary supervision by the bureaus of building, plumbing, water and street cleaning, from inspection by the State factory, workshop, veterinary and dairy and food agents, from national and State quarantine service, from the criticisms of the boards of charities, local and State, and from the watchfulness of the sanitary committee of councils and various voluntary civic associations. Adding together these sanitary factors it is obvious that Philadelphia to-day employs more agents and expends more resources in the interest of public health than did the whole English speaking world a century ago for exclusive health service.

But statistics still showed in 1890 a great inequality of achievement in the face of equality of powers. Only in the largest cities were the generous laws properly enforced. The smaller cities and the rural districts were practically without actual health administration. They had benefited little from the increased knowledge of the etiology of disease. Their only protection was such as was incident to a higher standard of living, to innovations in domestic economies, or to the increased medical skill of the family physician. These districts were a constant menace to the health of the cities and remained an obstacle to successful city sanitation. It became necessary, therefore, for the State to protect the clean against the unclean city, both against neglect in the country, and each against itself. Manifestly this could not be done by giving more powers to delinquent communities. Public sentiment responds only to definite stimuli. Statutes are not stimuli—administering officers are. They educate and stimulate because they act. The State having declared its supremacy in matters of health by enacting elaborate sanitary codes, must now undertake responsibility for the enforcement of its

laws. The main progress of the past decade has been in the development of administrative organs adapted to the execution of the extensive functions created during the preceding fifty years.

Permissive legislation has given way to mandatory legislation. Vaccination and notification of infectious diseases, as well as sanitary inspection, are enforced upon rural as well as urban districts not only by general legislation, but by central administration. State inspection of factories, mines, water and food sources has been instituted. Machinery is provided for gathering vital statistics from every corner of each large administrative area. There is the unmistakable tendency to substitute executive offices for deliberative councils or boards. Health bureaus are taking the place of health boards and superintendents displacing boards of vital statistics.

In England and on the European continent greatest progress has been made, as there the results of defective rural sanitation are most apparent. In most of our American states it is still true, except in a few large cities, that "eagerness for social legislation leads to neglect of the importance of political machinery." During the past decade, however, many important changes have been made in administrative methods, in the location of duties rather than in the imposition of further prohibitions, i. e., Connecticut has its county health officer, Massachusetts its central water supervision, and Pennsylvania its efficient live stock sanitary inspection from the capital, New York its bureau of health with one responsible administrative officer.

As we enter a new century the great problems which confront the sanitarian are largely administrative. Without the discovery of another germ or germicide, without another legal definition of nuisance or infection, our present codes if properly administered, could effect the practical eradication of the transmissible diseases known to northern climates. The supreme need is the constant application of knowledge and powers already possessed to conditions in every part of the land, farmyard as well as city. As the interests to be protected have gone beyond any one class, so the remedies to be applied are beyond the gift of any one class. The standard of administration cannot rise above the community's appreciation of the benefits to accrue from better sanitation. The enlightened interest of the lawyer and magistrate, merchant and teacher, capitalist and day laborer, is quite as essential to sanitary progress as the skill of the medical profession. By the identification of the interests of all classes, by the socialization of the science may we hope to introduce fundamental remedies for enervating and life-destroying conditions.

The bacteriologist has simplified the problem. He has turned our attention from the death list to the item of loss of vitality. Likewise

statistical tables and the compulsory notification of transmissible diseases have demonstrated the enormous losses which are due to the lack of timely ounces of prevention. The general death rate has fallen from 28 or 30 to 18 or 20. This saving exceeds a hundred fold the expense of administering precautionary measures. Many attempts to estimate this economic saving have been made. But there is no way of estimating the economic gain. What humanity gains by increased vitality, fresh blood, bounding pulse and clear eye cannot be set in figures. To-day there is no class of society that will not concede that it is benefiting by current legal and extra-legal sanitary measures.

The far-seeing employer believes that the best product can be obtained from the healthiest operatives. The shrewder merchant knows that a tired girl cannot equal the sales of one who has opportunity to rest. Landlords are beginning to appreciate that they obtain the surest and highest returns from sanitary dwellings. Parents and teachers and school boards are coming to realize that school children study best where the air is purest. Progressive dairymen believe in the economy of clean stables, good ventilation and careful milkers. Pure fruit and sound meat pay the largest and most certain profit. Good sanitary conditions are, in a word, coming to be part of our standard of living, a fixed portion of our business investment, an economic and social right to be enforced by legal sanctions.

The most skeptical, even more doubtful perhaps than the unprogressive mine operator, or factory owner, is the inferior physician. Unfortunately he too often believes that the State is arrogating to itself the functions of his profession when it prescribes regulations for infectious diseases. He frequently resents the dictatorial attitude of the State when it limits the sphere of his own activity or imposes upon him uncompensated duties. The medical profession as a whole, however, has outgrown this dependence upon transmissible diseases and recognizes that its prosperity increases with every increase in the average standard of living. It is the man in the ten room house rather than he in one room who supports the physicians in luxury. It is the healthy man, the healthy family and the health community that pay large doctors' bills. Society to-day prefers to regard the family physician as an educator rather than a physician, one who prepares patients to avoid disease rather than one who does a general repairing business. It is probably true that medical curricula have not as yet adequately emphasized the socialization of the physician's skill, but fortunately an advanced public sentiment, aided by teachers of social sciences and voluntary educational and scientific organizations, is effectually supplementing the medical curriculum and preparing the young physician to lead in sanitary reforms.

The evolution and present tendency of sanitary science as above outlined are duplicated in each city and state. Personal hygiene, comfort hygiene, commercial hygiene and nuisance sanitation develop in rapid succession as the community grows from a camp into a small city. Leisure class sanitation, selfish as may be its origin, is not successful until supplemented by philanthropic sanitation, as enlightened egoism must always be altruistic. Finally as sanitary standards are imposed upon those individuals who do not appreciate their value by those who do, so the city must teach the country to protect itself, and the final stage, democratic state sanitation is entered.

Such has been the course in Pennsylvania. Here too is the present problem administrative. Theoretical issues have been settled, the powers granted are wide and summary. To render our legislation effective certain fundamental changes in administrative organization seem imperative. As we may benefit by others' experience, so may we profit from a detailed analysis of our own experiences and our needs.

II.

The Growth of Sanitary Administration in Pennsylvania.

Sanitary legislation in Pennsylvania illustrates the general principle that sanitary progress is due not merely to a growth in the interpretation of the functions of government, but to an extension of principles as old as society itself to new conditions. There has never been a time since law was enforced, that poisoning was not a crime. Laws against fraud are as old as trade, and the right to private ownership in property presumed from its inception a legal protection against nuisances. In Pennsylvania, as elsewhere, common law concepts of poison, fraud and nuisance were destined, with the aid of medical science and a rising standard of life, to become the basis for scientific sanitary administration.

The stages in the growth of health laws are clearly marked, and as shown with reference to world sanitation, follow the line of social differentiation. As we find hygienic laws best applied in our large cities where social differences are most marked, so to-day the country, the borough and the small city represent various stages through which the State as a whole has slowly passed. Street cleaning and quarantine precede the systematic suppression of nuisances just as anti-slum sanitation precedes philanthropic or pro-slum sanitation. The interests of cities have here, as elsewhere, necessitated an increase in the area of administration and, legally, the State since 1885 has assumed responsibility for equal health administration in all sections of the Commonwealth.

The earliest regulations which pertained to health date back to the compact between Penn and his followers. Of five provisions

which to-day would be avowed health measures, one was rigidly enforced, while four remained dead letters until recently when they have been incorporated in our statute law. The first was the rule that "all great roads from city to city and within towns and cities"* should be regular and at least forty feet in width.

But this simple provision, intended solely to render communication more easy and agreeable, has been an important sanitary safeguard for the city. The tradition of wide, straight, unobstructed streets has persisted for two centuries. Free space is part of our standard of living. The sky scraper therefore met opposition at the outset, and fifty years ago Philadelphia took advantage of this tradition and passed regulations rendering the rookery unpracticable. The obstacles to this act would have been tenfold as great, and its support considerably diminished had the streets from the first been built haphazard and narrow.

It would be interesting to estimate the loss of wealth and life which the State has suffered because the four other quasi-sanitary provisions of the earliest agreements were not enforced. Instead, natural forces were left to work out their own results unaided by man's hard bought judgment. It is significant that we have been compelled at last, at great expense, to undertake to remedy just the conditions which these provisions were designed to prevent.

One provided that "one acre in five of wooded land should be preserved." But this was not done. On the contrary, forests were destroyed until the health of the State demanded forestry laws† and a forestry commission, remission of taxes, appropriations, etc.

Another agreement provided for the regulation of markets and fairs. The system of regulation failed to keep pace with the development of commercial methods. The doctrine of *laissez faire* was substituted for that of regulation, and during the past fifty years we have attempted with difficulty to reassert the community's right and duty to protect foods against pollution and adulteration.

The third agreement read "There shall be a separate registration of births, marriages, burials and wills."‡ These facts have never been completely recorded and at the present time sanitarians throughout the State are attempting to secure legislation which will make it possible and compulsory. In the meantime the statement of the secretary of the State Board of Health remains true, that "In the greater part of the State a human being may be put under the ground without the slightest legal notice any more than if he were a dog."§

The fourth provision was far ahead of its time, and only the most optimistic of existing sanitarians prophesy its enforcement in

*Frame. Poo's Charter and Constitutions.

†Act 1 June, 1887, P. L. 173.

‡Agreement XXII.

§Report 1899. See Chapter Vital Statistics to follow.

the near future. The central authority was to "pass upon the suitability of sites for towns and public buildings."* We know that sites for towns and public buildings have been and are to-day selected without reference to their healthiness. In fact commercial advantages seem to incline to low and less healthy sites for towns. As a matter of theory we know that much disease could be avoided if only towns when first established or when extended would profit by those few elementary principles which point out the superiority of dry ground to damp ground, or of high to low ground. Yet even after our successful experiments in sanitation, economic motives are sole determinants in locating town sites.

We are not surprised that the early settler did not regulate his activities and that of his simple government in accordance with sanitary standards. Conditions favored neither the acceptance nor the application of such a criterion. Governmental interference seemed unnecessary. It was certainly impracticable. The first century was one of individual and isolated effort. So long as contact was infrequent the evils of un-sanitary conditions remained relatively unimportant.

These evils were none the less actual, however. Houses were built for shelter not comfort. Barns were erected not far from the houses, and nearer still were the privy and well. Barnyard and privy filth drained into wells. Filth of every description was carried into dwellings, where ventilation was unknown and damp floors and musty walls favored the multiplication of disease germs. We know that the rural towns were frequently visited with epidemics. The farms must also have been afflicted as the result of their own unsanitary conditions, and of contact with miller, peddler, forester, preacher, surveyor and immigrant. Just how many died from preventable diseases will never be known. From our knowledge of these diseases, however, it is certain that typhoid must have destroyed many, and diphtheria, measles, scarlet fever and influenza not to mention small-pox, must have levied heavy tribute upon the farms as upon the villages.

Just as fast as villages sprang up the effects of unsanitary conditions became cumulative. Disease could not be carried in a few hours from Easton or Lancaster to York and Bethlehem. But when once introduced, a disease was more persistent and more fatal than is possible to-day. The sanitary condition of those towns was infinitely worse than to-day. From the description of Philadelphia as late as 1794,† we can get some estimate of the condition of the streets of the rural towns. It is not probable that the aesthetic standards of such towns as York, Harrisburg or Reading were as

*Frame 1683, X.

†McMaster, II 125 ff.

high as in the capital city, the center of new world fashion and luxury. Yet even in that city, every rubbish heap and vacant lot had its rare collection of dead dogs and cats. Gutters received that part of the household refuse that did not go out of the back door to the garden. Streets were not cleaned; they were merely cleared of actual obstructions. The air was defiled by unregulated cess-pools, privies, stables and piggeries.

As a result of these conditions the so-called children's diseases, such as diphtheria, croup, measles, scarlet fever, etc., became indigenous. It was expected as a matter of course that each town should have its annual run of fevers. Naturally society did not practice wise measures to prevent evils which were regarded as inherent in society and generated by some occult force. Only in the case of such diseases as small-pox and yellow fever did it occur to the rural community or even to Philadelphia to offer any opposition. These two diseases were of foreign importation and experience had shown that isolation would check their course. So we find towns quarantining suspected yellow fever patients at the same time that diphtheria was regarded as a dispensation of Providence.

This ignorance of the etiology of disease partially explains the toleration of the nuisances which abounded in the rural towns. The only criterion of nuisance was aesthetic or economic. The general standard of endurance was very high, for every one had an offensive privy, stable, pig pen or cesspool. Consequently it was only the most atrocious nuisance that merited attention. Unless water was made absolutely unfit to swallow by the draining from another's barn-yard the drainage was not regarded as serious. Only when odors became physically unbearable, as in the case of New Amsterdam cheese,* would nuisances be abated. Had there been some common censor, or any one to whom complaints might have been sent, it is probable that we should find most interesting records of wrongs endured by citizens of such towns as Lancaster, York, Easton and Harrisburg. But as it was, there was no nuisance inspector nor health authority. The aggrieved citizen must appoint himself a sanitary police. He naturally preferred to endure the nuisance rather than become one by doing an unneighborly act. Not until a social hierarchy was established in the community could the common law of nuisances unaided by administrative organs, effect any sanitary progress.

How ineffective statutes are unless they provide for their own enforcement may be seen from the experience of Philadelphia. The unsanitary condition of her streets and alleys, and the absolute helplessness in case of epidemics persisted in 1793 just because no machinery existed for applying the statutes and ordinances which

*New Amsterdam Sanitary Rules Records. III 164.

the Legislature and the city council had exacted. While the rest of the State had neither sanitary legislation nor administration, her legislation had kept pace with her growth and the requirements of city conditions. Her administration remained defective because legislators did not appreciate that new functions require new machinery of execution.

The Quakers brought small-pox in their first vessel. The city had suffered from numerous fevers. These were designated as plagues, distempers, or malignant, bilious, Dutch, jail or yellow fever according to intensity, outward manifestation or supposed origin. No efforts had been made to prevent the recurrence of outbreaks other than certain quarantine regulations which were never enforced until the danger was practically beyond control. The principle of isolation was confined to sickly vessels until 1793, when a city hospital was erected.

In self defense the province had treated infected vessels in an arbitrary way. In 1700 an act of Assembly prohibited "the entrance of sickly vessels into this government."^{*} After 1741 such vessels were allowed to quarantine on Fisher's Island. Only such vessels as were known to be infected were compelled to quarantine. It was not to the interests of shippers to perform voluntary quarantine, therefore they took chances on landing before being discovered. If discovered they were peremptorily ordered out of the harbor. For the most part they escaped detection until it was useless to attempt to control the imported contagion by quarantining the few who were permanently connected with the ship. Therefore epidemics of small-pox and yellow fever were introduced from time to time, with practically no opposition.

In 1742 a pest house was erected on Fisher's Island[†] but, until 1793, no systematic effort was made to isolate the cases developing at home, or to prevent the accumulations of filth by entrusting street cleaning to a board of health. Until that time and for nearly fifty years afterwards, except during lucid intervals of short duration, the cleaning of the streets was left as it is to-day in China, to the pride of the individual housewife. That is, it was not done at all. The streets were kept clear of rubbish which actually obstructed commerce and business. But cleaning was not known except on the streets frequented by the fashionable and well to do classes.[‡]

Community life with its torts and frictions had, by 1793, given rise to a great deal of legislation specially applying to Philadelphia conditions.

The charter of 1791 authorized the mayor to appoint a "clerk of

^{*}For a brief account of these epidemics see Ford Address of Welcome to the American Public Health Association, Philadelphia, 1897.

[†]See Watson's Annals and Ford review in address to American Public Health Association, 1897.

[‡]For condition of Philadelphia see McMaster, II, 125 ff.

the market, who shall have assize of bread, wine, beer, wood and other things." But this common law power was destined to play but little part in the development of community precautions against adulterations. The necessity for vigilant assize of ordinary provisions was not so apparent as for wines, beer, etc. Beer was bought of the publican. It was late in the development of our Pennsylvania cities before the general public came to depend upon the baker for bread, the grocer for canned goods, jellies, etc. It is not until there is profit in deception that inspection to prevent fraud is a pressing necessity. For instance, the act of March, 1775, imposing a penalty of twenty-five dollars for using impure flour was made much easier of adoption because of the time-honored* recognition of the community's right to a fair bargain and honest article. This act in turn furnished precedent for the stringent act of 1797† regulating the sale of bread.

The charter of 1701 likewise empowered the "mayor, recorder and two other aldermen with the city sheriff and town clerk to hold and keep a court of record quarterly * * * and upon their own view or after a legal procedure in some of these courts, to cause all nuisances and encroachments in the streets * * * to be removed, and punish the parties concerned as the law and usage in such cases shall require." These laws were to be passed by the common council, then as now responsible for the cleaning, watching, paving of the streets. As the city grew it became necessary to grant more specific powers; therefore the general power to remove nuisances and punish offenders was modified so as to define in advance certain categories of nuisance and to prevent the existence of a few nuisances by inspectors.‡ As early as 1721 party walls were regulated§ and by 1769 a complete nuisance code was in force.

The act of February 18, 1769,|| prohibited the discharge of noxious liquors on adjacent grounds, into lanes and alleys * * * or into private wells on penalty of twenty pounds. It imposed a penalty of thirty-five shillings for keeping noxious and offensive matters in any of the built up parts of the city, and a like penalty for leaving carcasses or filth unburied anywhere in the district or township. "And the more effectually to preserve the waters in said city, the district of Southwark and Northern Liberties wholesome and fit for use, the city commissioner shall limit, direct and appoint the depth of all wells and sinks."* The penalty for violating the provisions of this section† was ten pounds. By 1782‡ city regulations

*The inspection of industries by the state dated back to the time of Henry VI. The gilds had been judges of markets, etc. Hanson. Debate on Board of Health.

†Act April 1, 1797. 3 Smith 294.

‡Act 1730. 1 Smith 194, with regard to Bakers and Coopers.

§Act 27th Feb., 1721.

||1 Smith 284.

*Water works were introduced in 1793.

†Section XII.

were extended to the method of building the vaults, etc. Yet, it does not appear that this stringent legislation was effectual in preventing accumulations of filth or the pollution of wells. The unsanitary condition of Philadelphia streets in 1793§ is proof of the principle that however great the penalties imposed legislation alone, without a watchful administration, cannot improve sanitary conditions.

The epidemic of yellow fever in 1793 was the greatest object lesson our State ever had. It was the electric shock that cleared the mind of the population. Apparently for the first time the people of Pennsylvania, as well as those of the entire country, were enabled to see that there was nothing mysterious or supernatural about the dread fever. Whatever its original cause may have been it was almost universally admitted|| that the disease was imported from the West Indies. It was seen that it was carried from district to district, and from city to city, in merchandise and apparel, as well as by persons. A direct connection was established between overcrowding and filth and the rate of communication of the disease. Timely isolation of first cases proved to be an effectual check to the progress of the epidemic. Disinfection successfully deprived houses and clothes of the power to infect. And lastly and of greatest importance, a death blow was given to the numerous superstitions concerning the origin of the disease. The fearless were smitten as frequently as the terrified. It was demonstrated that gun shooting, bell ringing and incantations were futile and that fresh air, pure water and wholesome food were the proper agents for staying the progress of the disease. Cities, states and the national government recognized that they might master the problem and prevent another outbreak. They looked the enemy in the face; pest houses were erected, and city, state and national quarantine regulations were adopted from Boston to Augusta.†

The epidemic had been so destructive to life and had so crippled commercial and industrial activity that the merchant and members of the learned professions gave the subject careful consideration. It was declared again and again in Congress that the control of such epidemics was required in the interests of commerce. A new theory of disease and its dissemination was developed. ††Matthew Carey addressed to the American Philosophical Society a summary of the truths which this epidemic had demonstrated:

‡Act April 15, 1782.

§This same act provided for the regulations of common sewers by the mayor and aldermen.

||Sec McMaster, II. On p. 125 ff.

**Such was the decision of the College of Physicians. Some attributed it to a flight of pigeons or to vice, etc. Lee Carey's History on the Epidemic.

†For a compilation of these laws see Surgeon General Billing's report to National Board of Health, 1899.

*Matthew Carey, November 30, 1793. Philadelphia. "Account of the Malignant Fever lately prevalent in Philadelphia, with a statement of the proceedings that took place on the subject in different parts of the United States."

1. It is more economical to prevent than to suffer disease, for disease cripples commerce and industry. "At first view, it would appear that Philadelphia alone felt the scourge; but its effects have spread in almost every direction through a great part of the union. * * * It is probable that considering the matter merely in a commercial point of light, the shock caused by the fever has been felt to the southern extreme of the United States."* Philadelphia was for weeks cut off from communication with Baltimore, New York and trading points in adjoining states, and the rural sections of Pennsylvania.†

2. Filth and overcrowding are conditions favorable to dissemination of yellow fever.

"The mortality in confined streets, small allies and close houses debarred of a free circulation of air, has exceeded, in a great proportion, that in the large streets and well aired houses. In some of the allies a third or fourth of the whole of the inhabitants are no more. In 30 houses, the whole number in Pewter Platter alley, 32 people died, and in Market street, in 170 houses, only 39. The streets in the suburbs that had the benefit of the country air * * * have suffered little."

"It has been dreadfully destructive among the poor. It is very probable that at least seven-eighths of the number of the dead were of that class. The inhabitants of dirty houses have severely expiated their neglect of cleanliness and decency by the numbers of them that have fallen sacrifices. Whole families in such houses have sunk into one silent, undistinguishing grave.‡

3. Isolation, timely isolation, would check the spread of the disease, as quarantine would prevent its introduction. This had been demonstrated by several cities, when, under conditions favorable to the progress of the disease, the epidemic had been checked at its inception by the isolation of patients. Likewise, it was clear that the plague was ended in Philadelphia by means of the extension of the facilities for isolation.

4. The disease spread independently of the temperature. Cold and rain did not extinguish the disorder. A valuable contribution to science was made by Carey, when he used vital statistics to prove that the weather was not the cause of epidemics, and that yellow fever sought victims both in sunlight and under a murky sky. By tables it appeared that "those days on which the mortality was at its highest stage were five degrees colder than those when the deaths were reduced to five-eighths."§

*Bethlehem, Nazareth, Reading and Easton held mass meetings protesting against communication with Philadelphia and imposing quarantine duties.

†Carey, pp. 13-14.

‡P. 76-77.

§Chapter XV.

5. In times of epidemics public gatherings should be avoided. Church atmosphere offers no immunity." It is remarkable that those congregations, whose places of worship were most crowded, have suffered the most dreadfully." "I hope the awful lesson some of our congregations hold forth on this subject by a mortality out of all proportion to their numbers, will serve as a memento at all future times in the like critical emergencies!*

6. Citizens are willing to be protected against disease. They will permit the city to disinfect and clean their houses. They will support street cleaning. They will submit to inspections. They may be taught to notify authorities of infectious cases. They will welcome hospital treatment.†

Carey went farther. He reminded the people of the United States of the real cause of the panic. It is interesting that in the days when bleeding was considered a sovereign remedy and divine wrath was regarded as the cause of ravaging epidemics, an economist should have penetrated to the heart of the question. He said the cause was two-fold. First, there were no facilities for isolation of the first cases. Secondly, there was no proper law on the subject, empowering the civil authority to interpose with the necessary energy at the first inroad of such a dreadful destroyer. ‡"The suggestion, which this far seeing man made, is worth printing in full, because it is as truly necessary for rural Pennsylvania to-day, as it was for great cities a century ago.

"It is to be hoped that our Legislature, as well as that of every state in the union, will see the propriety of giving this important subject the consideration it so amply deserves, and of making provision against like calamities in future. In Italy, at Spalato, where the plague raged fifteen or twenty years ago, it was made a capital offense for every infected man not to reveal his situation to the proper authority; and the same penalty was denounced against such as did not inform of infected persons, when they knew of them. This is too severe for the paternal mildness of our criminal code; but some penalties ought to be denounced in such cases. Indeed were lazarettos on a proper establishment it would be an object of desire with the stick to be transported to them."§

Compulsory notification, compulsory isolation, compulsory house and street cleaning, compulsory disinfection—in a word compulsory prevention of contagious diseases in the interests of social welfare.

In the absence of sanitary regulations our Governor and numerous Pennsylvania towns took the law into their hands, and declared that the interests of the individual must be subordinated to those

*Ibid, p. 107-108. To this day there is difficulty in securing the acceptance of the compulsory vaccination clause for Sunday schools, etc.

†P. 84.

‡P. 85.

§P. 83-84.

of the community. Nazareth, Bethlehem, Reading and Easton placed conditions upon the entrance to those cities of fugitives from Philadelphia. Philadelphia's health committee permitted fugitives to return only after infected houses had been disinfected. But the Legislature went beyond the recognition of the State's obligation to protect health in case of actual emergency. It committed itself, as did the national Congress, to the principle that so far as practicable, governments are under obligation to forestall the outbreaking of disease. Because of constitutional difficulties, real and supposed, Congress limited its action to hearty support of the states, in their effort to prevent the introduction of infectious diseases.* But our State passed two acts which involved every principle known to existing sanitary legislation. They were the absolute negation of the right of the individual to independence of action in matters affecting public health.

A quarantine act differing from former acts was passed which imposed upon health authorities the burden of proving the infection of vessels. The new act took it for granted that all ships were infected until they proved free from infection. This was a great step in sanitary administration. This is the only way to enforce sanitary regulations—to inspect before approving. We have learned by experience to apply this principle to other branches of sanitation. To-day the presumption is against every piece of plumbing, every building plan, every factory and every dairy in the large cities. Generally we are coming to see that by the further extension of this principle to milk, food and water sources, to tenements and drains are our statutes to become effective.

The second act established a board of health in Philadelphia.† This board was to have general charge of the health of the city.

Again in 1795 persons from Norfolk and New York were prohibited from coming within fifteen miles of Philadelphia until cold weather checked the epidemic of fever which was raging in those cities. In 1798 the council of Philadelphia was authorized to prohibit burials within the city limits.

The city water supply was protected by legislative penalties, from which we may see that even at that time, government was not considered as a mere corrective institution. Positive constructive acts might be demanded for the public good. The idea obtained that the purpose of state and municipal government was to achieve by collective action, certain collective benefits. The preamble to the act of March 11, 1789, incorporating the city of Philadelphia, states

*The act of 1796 pledged the aid of the United States in the enforcement of local quarantine regulations.

†Act April 24, 1794. State Laws, III, 553. Penalties of \$500 were imposed for evading quarantine.

‡Act April 22, 1794.

§2 Smith 462.

candidly the function of government as then understood. "The intention of civil government is to provide for the order, safety and happiness of the people; and where the general systems and regulations thereof are found to be ineffectual it is the duty of the Legislature to remedy the defects."

The secret of the failure of the awakening of 1793-1799 to effect permanent sanitary improvement, is to be found in the fact often noted that legislation was not accompanied with the proper organization of administrative machinery. The State in the interests of the Commonwealth as a whole gave the Philadelphia authorities extensive sanitary powers. It did not make the city authorities responsible to the State for the proper exercise of those powers. Furthermore, it did not guaranty to that city protection against other portions of the State, while it utterly ignored their possible and actual interests.

It is customary to attribute this neglect of sanitary provisions for rural sections to their supposed immunity to epidemic diseases. But this reason is not sufficient to explain our tardy action. In 1793 when Philadelphia was suffering from yellow fever, Carey said that epidemic diseases were prevalent throughout the State. Harrisburg, then a city of but 1,200 inhabitants, lost one-fifteenth of its population.* All portions of the State united in imposing upon Philadelphia certain duties, and in the adoption of rigid quarantine laws which certainly isolated Philadelphia's right to independent action. The fact is, this earliest legislation, as most of our later sanitary legislation, was formulated chiefly in the interests of the congested areas.

Every part of Pennsylvania needed in 1794 the protection of health laws. Every town owed it to the State to clean its streets and to isolate its infected patients. The whole State needed a system of notification of infectious cases, of deaths, of burials and births, etc.

The legislation applied to Philadelphia alone because only in Philadelphia did people demand "for the advancement of public health * * * that they be invested with more speedy, vigorous and effective powers of government."† The other sections of the State were not protected because they did not realize their need and because Philadelphia did not see that her health depended largely upon safeguards to health in every part of the State.‡ Not until Philadelphia demanded protection against the rest of the State, did the rural sections get protection against their own indifference and neglect.

*Carey, p. 90.

†This is taken from preamble to incorporation act 1789.

‡An effective illustration is furnished by the act of 1870, which empowered Philadelphia to require the vaccination of all school children.

The fact is the epidemics in the last decade of the eighteenth century were of too brief duration and raged in too few towns. If the population of every town in the State had been decimated, legislation for rural sections would not have been delayed a century. If Philadelphia had been visited annually for ten years her people would have acquired the habit of scrupulous cleanliness. If communication with the country had been easier so that the effects of country filth upon city health had been a little more apparent, Philadelphia would have forced upon the rural towns habits of cleanliness. In short, if the calamity had been more general and more terrible reasoning men would have adopted general instead of special remedies and preventive instead of curative sanitary measures.

But our legislators permitted each succeeding generation to learn by its own experience. Until 1885 every section of the State was allowed to grow up in its own way. As Williamsport passed through the various stages of development it paid heavily for experience, which might have been gained vicariously by the study of Pittsburg's evolution from town to city. The rural towns repeated all the mistakes of the colonial town, and waited for some catastrophe to suggest that they were not adapting their regulations to their environment. When any city asked the Legislature to grant powers which would make possible a readjustment these powers were willingly granted. Philadelphia had obtained most extensive powers for its board of health. Lancaster and Reading had charters which enabled them to condemn property for the erection of water works or sewers. No town was ever denied any request for powers to protect the health of its citizens. The fault was not with the Legislature, except as it failed to recognize that the time had come for general instead of special health legislation. The various epidemics should have demonstrated that it was not safe to depend upon the slow awakening of sanitary science in each little city. Impetus as well as enlightenment was needed from without.

In 1851* the Legislature seemed to have realized this. An attempt was made to hasten by suggestion the development of cleanly conditions in all boroughs. The act addressed the boroughs of the State, in substance as follows: In Philadelphia and Pittsburg where people are particular about their clothes, the air they breathe and the sights on the streets, piggeries, slaughter houses, stagnant pools, rotting piles of garbage and dead animals, yawning graveyards and reeking privy vaults are nuisances. As such they may be condemned and moved or cleaned as the case may require. To those towns whose aesthetic standards have demanded cleanliness we have given almost unqualified powers to procure pure air and pure water and pure food. We do not know how advanced you are.

*3 April, 1851, P. L. 320.

We do not wish to hasten your development artificially. We will not impose upon you city standards of cleanliness and decency. We do, however, give you the opportunity to improve without obstacles from legal quibblers. We may go so far as to illuminate the general nuisance clause by mentioning certain specific nuisances which are especially noisome and which you will probably notice after we have called your attention to them. To show how important we regard this matter we will permit you to collect not only the cost of abating nuisances but also twenty per cent. in addition. More than this, we will permit you to go upon a man's premises or to send officers to discover actual or potential nuisances. Lastly we will give you power to strike a death blow to certain fruitful sources of nuisances—you may compel property owners so to build vaults, cess-pools, sinks and drains, stables, graves, etc., that they can never in the future become nuisances.*”

Twenty odd years of experience with this permissive legislation demonstrated that the foregoing limits on the necessity of avoiding nuisances were not effectual stimuli. The Legislature had taken too much for granted. It ought to have suggested just what officers the towns should employ. This was done in 1874† when the provisions of the act of 1851 were elaborated so far as they extend to towns with a population between ten and thirty thousand.‡ These towns were told that the best way to enforce the numerous nuisance and health ordinances which it was hoped their taste would demand, was by the employment of a board of health. If the councils chose to appoint such boards, the number of members should be five. The board was to have the right of its own motion to appoint a health officer and clerk and as many district physicians as it thought fit. It might determine the salaries of these officers and dismiss them. The mayor was to depute so many policemen as the board might desire for sanitary police. The nuisance laws to be enforced by the board were to be passed by the councils. The act intended that councils should leave the matter of nuisance legislation to the board, and imposed a penalty of one hundred dollars for any violation of their regulations. Whether or no the town should have a board of health remained as before a question of local taste. But the question having been once decided in the affirmative, the Assembly took out of the hands of the council the general administration of nuisance and health laws, and imposed upon it the duty of maintaining the rulings of the board. Twenty years later the Leg-

*19 May, 1874, P. L. 1395, and 13 May, 1876, P. L. 159, provided for removal of contents of cemeteries when they become nuisances. 4 April, 1863, P. L. 223; 5 April, 1870, P. L. 47; 9 May, 1871, P. L. 263; 15 June, 1871, P. L. 388, provided and directed drainage of spouty lands, swamps, etc., through local commissions.

†23 May, 1874. P. L. 152.

‡Made 75,000 by act of 11 April, 1876, P. L. 212.

islature had discovered still another secret of sanitary pedagogics. In place of "shall have power to appoint" they substituted "shall appoint within six months," and in six years the eleven local boards of 1885, had increased to over 600.*

It must not be inferred from this that sanitation had been at a standstill. On the contrary there had been tremendous progress. But this advance was due to other causes than conscious effort to improve health. In 1821, for instance, Philadelphia introduced steel water pipes and drains in place of wood. Throughout the State these steel water carriers were adopted as need for drains was felt. The consequence was that streets and houses were cleaner, and the problem of draining a city and introducing waterworks was simplified. So the railroad brought the country to the town. It was seen what comfort came along with water works. Water was always at hand for domestic use to protect property from fire and to beautify lawns. Fire brigades and water works came to be regarded as economic necessities and as absolutely essential to the maintenance of position among the aristocracy of towns.† With water reservoirs came the necessity for protection against such pollution as would render the water objectionable.‡ With water came also the possibility of flushing streets and sewers. A reasonable demand arose for protection to gowns and olfactory nerves. Personal hygiene also benefited from public cleanliness. Houses and persons were constantly under inspection. Personal and domestic cleanliness came to be regarded more and more indispensable to social position. The use of the bath for the satisfaction of those with whom we mingled soon gives place to its frequent use for personal gratification. In a word, private and public hygiene profited greatly from the economic and industrial progress which made cleanliness easier and more agreeable than filth.

The rural sections profited, somewhat indirectly from the facilities introduced into domestic and public life in the cities. A taste for clean streets was encouraged by the reports of great efforts made by cities to secure clean streets. The manufacturer of bath tubs pushed his trade into the country. Agents for various disinfectants told marvelous tales of the havoc made by odors and filth. Yet on the whole the smaller communities profited very slowly by the indirect process of absorption. The lessons of experience were not vivid enough as a rule to impel to action. These sections were more dependent upon conscious adaptation than were the larger communities where the emulative economic, industrial and aesthetic motives are stronger, and a wider basis for comparison exists. A "leisure class" in a city can more readily impose its standards upon the low-

*Act 11 May, 1893, P. L. 44.

†See report of Lancaster's celebration of introduction of water, 1834.

‡These were always special acts and applied generally to reservoirs not streams.

est stratum of city life, than upon the leisure class of smaller communities.

As we shall see, however, the special legislation which had kept pace with the development of Philadelphia, was indirectly legislation for the entire State. The Constitutional phases of the questions pertaining to public hygiene had been thoroughly reviewed by the courts. Thus a body of legal interpretation had evolved, which settled definitely the relation of public health to the State and the municipality. This was therefore so much ground cleared, when the State should come to legislate for all portions of the Commonwealth. Given like conditions, equal legal protection should be guaranteed to all portions of the State. What is justifiable in Philadelphia is within the Constitution in Mahanoy City, if it can be shown that the conditions are similar. General sanitary legislation would wait therefore until the Legislature should realize that unsanitary conditions in the country as in the city, are a menace to the public health.

For the rural portion of the State, there was then no direct sanitary legislation and no sanitary administration until after 1885. The State would manifestly follow in its general legislation the policy of its special acts. It would wait for an emergency, or a catastrophe which would horrify mankind. As with factory and mine legislation the Assembly would act on impulse. Reason, foresight, physical law, and experience were not sufficient. They must act without thinking. The catastrophe came—the Plymouth epidemic. In a little town of 8,000, there were 1,100 cases of typhoid and 114 deaths. "Out of the agonies of Plymouth, a State Board of Health was born."* The State promised that henceforth, conditions pertaining to health when formed within its jurisdiction would be constantly and vigilantly superintended by the State. An act under the inspiration of a calamity, supported by vivid emotions, passed through a legislature which only two years before had decided after six months of debate that this State needed no board of health and no vital statistics.

*See "The Debit and Credit Account of the Plymouth Epidemic," Benj. Lee.

CHAPTER III.

Sanitation in Pennsylvania in 1885.

We have seen that until 1885, sanitation in Pennsylvania had been regarded as a local not State problem. The Plymouth catastrophe led to the definite recognition of the State's obligation to interpose directly in behalf of the public health. Hitherto power had been granted to cities whenever requested. Now duties were imposed and State officers were appointed to see that the powers were exercised. The year 1885 marks the beginning of a new era in the history of public hygiene in this Commonwealth. To understand the progress of the past fifteen years, it is necessary to examine the status of sanitary science, sanitary legislation and sanitary administration as these existed in the year 1885.

By 1885, sanitation had become a science. It was no longer in the empirical stage. There were certain indisputable scientific facts which were open to physician, legislator and the general public. The objects to be attained, as well as the means, were clearly understood. Sanitary law was aimed at disease germs, and at the conditions which favored their multiplication. The means of checking the growth of the minute and destructive organisms were exhaustively set forth in a work which remains to this day a classic. To it little has been added by fifteen years investigation in splendid laboratories, except that more germs have been discovered.*

It was known that filth of every description propagated disease germs. It was known that organic matter nourished them. They would thrive in milk and water and food. They carried their poison through the air. They were specially prolific where air was contaminated by decomposing matter, whether external to the human body or emitted by breathing. Danger lurked in defective plumbing, as in defective ventilation or poor sewerage. Of exceptional fecundity was the life which fed upon infected clothing or infected excreta. In short, the problem of germ multiplication was the old Malthusian proposition. The only limit to reproduction was the food supply.

Science taught at the time how man could destroy this food supply. To remove decomposing organic matter from the street and house and person, was known as the universally practicable method. Oxygen was the great destroyer. In proportion as they contained oxygen were chemical compounds seen to possess disinfecting power.

*"Disinfection and Personal Prophylaxis in Infectious Diseases." Surgeon-General George Sternberg, U. S. A.

If drains, pipes, sewers, houses, etc., could be kept free from accumulations of organic matter which would decompose, it was clear that in them the disease germ could find no sustenance. It would instead yield its life to the oxygen of the air or water. No physician doubted for an instant the possibility of eradicating every infectious disease.

On the other hand the physician knew that infectious diseases were universal. A large portion of his practice came from victims of some communicable disease. He observed every year a school epidemic. He knew that these epidemics were made possible by failure to isolate the earliest patients. The physician in Philadelphia, Pittsburg or Allegheny, was in the habit of giving formal notice to the city board of health whenever a case of diphtheria, scarlet fever or small-pox was found. The object of that action was known to be the protection of the community against his patient. He was accustomed to the yellow, blue or red quarantine signs which told the city that within was a colony of dangerous germs which were under complete control so long as no food was brought to them from without. Every physician in the State had passed a satisfactory examination in the theory of transmissible diseases.

The Legislature knew more. Preventable diseases were costing the State more than its entire expenditure for government. The Assembly had at different times committed itself to a belief in a very strong governmental opposition to the spread of disease. It had ordered that in Philadelphia there should be no appeal from the decision of the board of health as to what constitutes a nuisance. In 1818, heavy penalties had been inflicted for the violation of any by-laws which should be adopted by the board of health. In 1851, boroughs had been told that the State would confer all powers necessary to stamp out all communicable diseases. The whole matter had been debated in 1883. If any representatives were ignorant as to the nature of these enemies to life and health, it was not because the truth was inaccessible.

But the social aspects of the question and the legal requirements were not appreciated. All classes ordinarily regarded the problem of public health as a technical question to be solved by the physicians. Before it could be said that the facts above recited were common knowledge, it was necessary that something render the knowledge vivid. They must be roused to action by feeling the truth. The Plymouth epidemic served this purpose. It is therefore true that at the particular time when the State Board of Health and Vital Statistics was appointed, the most essential truths of sanitary science were known to physicians, legislators, and the general public.

For the application of these truths to conditions throughout the

State, the Legislature established a central board of health. Largely due to the activity of that central board and to legislation suggested by it, over six hundred boards of health have been organized. In the main, however, the board has worked with the laws in force in 1885. By contrasting the legislative authority at that time vested in boroughs and cities, with the authority actually exercised in them, we may see to what extent a slight change in administrative machinery has given life to legislative enactment.

Nuisances.

For the nuisance law of 1885, we must look rather to judicial interpretation than to statutory definitions. The Legislature has never attempted to give an exhaustive definition of nuisance. As a usual thing, town charters provided for the abatement of nuisances by the municipality. What constituted a nuisance was to be determined "by the laws and usages."* At the time William Penn gave the first charter to Philadelphia only two or three general nuisance acts had been passed by the English Parliament,† hence "the laws and usages" were to be found in judicial interpretation.

English practice was well defined, however, as Bracton and Glanville cite numerous cases. They had likewise developed the law of abatement of private and common nuisance. For special damage, the injured person might bring action; while for a damage shared with the public indictment was the rule. The damage might be to property or to the enjoyment of it. If a stench rendered the use of a neighbor's property disagreeable, the stench was a nuisance. In fact we have in two centuries added little to the definition of nuisance. The progress has been in the inclusiveness of the definition and in the machinery of abatement.‡

But just because a nuisance is an annoyance, because it is therefore largely a matter of individual or public sensitiveness, it was not necessary that the Pennsylvania judge quote precedent. Community life presumes the protection of the majority against annoyances, and, likewise, the protection of the individual against any interference with the enjoyment of his property. Had there been, in 1701, no knowledge of a common law of nuisances, we should have in Pennsylvania to-day the same complete nuisance code.

When the Frame consecrated the streets to public use, it laid the foundation for an elaborate nuisance law, just as the principle of legal protection to property would have led to the development of a complete trespass code. Laws, like systems of philosophy, are due rather to conditions than to inheritance. The American law of nuis-

*Philadelphia Charter of 1701.

†Making and selling of fireworks, 9 & 10 W. III c. 7. Lotteries, 10 & 11 W. III c. 17. Keeping of gunpowder, 12 Geo. III c. 61.

‡Reeves, II 135-142. Blackstone, III 216, IV 166.

ances is not an outgrowth of English law. Pennsylvania's nuisance law is the outgrowth of Pennsylvania conditions.

So when the charter of Philadelphia gave the power to remove nuisances and obstructions from the street, it said in substance: "The wide streets of this city are for general use and enjoyment. The public shall determine what renders their use less enjoyable." The whole question was from the first, so far as nuisances affecting health are concerned, a matter of aesthetic and economic standards. It was wise for the State Assembly to leave the definition to each community, until such time as the Legislature should assume responsibility for the common standards of taste so far as they affected public health. This could not come until a nuisance prejudicial to the health of Beaver Falls, or Pottsville, proved to be prejudicial to the interests of the State.

Gradually, however, the Assembly had begun to take out of the hands of the judges and communities the question of fact as to certain annoyances. In 1789, as in 1701, the council of Philadelphia was given general power to regulate nuisances. But the law of 1789 mentioned certain annoyances as nuisances.* Heaps of manure or garbage, goats at large, leaking privies, etc., were to be regarded as nuisances, the ordinances of Philadelphia or the decisions of her magistrates to the contrary notwithstanding. In 1818, the Assembly ordered that henceforth, the definition of such nuisances as the State law had not specifically mentioned, should depend upon the decision of the board of health. Such is the law to-day, except that the Assembly has reserved to the State Board of Health the power to add to the list of nuisances which come within the definition given by the local board.

The other cities and boroughs of the State were at first given the same general powers to remove nuisances. Progress depended entirely upon the sensibilities of each community. Occasionally, when towns asked for special powers, the Assembly would remove all possibility of local disagreement as to certain annoyances by pronouncing them public nuisances. But the greater share were left to the discretion of the community.†

The cases which arose were, however, generally decided without reference to legislative enactment. The courts based their opinions upon common law or upon implied power residing in every community. They interpreted the law of nuisances in conformity with the following general principles:

"The right to have the air float over one's premises (and public highways) free from all unnatural or artificial impurities, is a right as absolute as the right to the soil itself."‡

*See chapter II, p. 373.

†See act of 1851, preceding chapter.

‡Ward, *Law of Nuisances*, 1875, p. 541.

The right to have the water of a stream or well come to him in its natural purity is as absolute as the right of property itself. It must be said that the higher judiciary in Pennsylvania have always been ready to enforce a most liberal interpretation of the maxim: "So use your own, that you will not injure another." They also declare that the violation of this maxim for twenty years does not exempt one from indictment because of its present violation. (See *Weir's Appeal*, 74 Penn St. 230.)

Blackstone enunciated the same as having been handed down from Bracton.

It is significant that the most complete exposition of the law of nuisances which we have to-day, Wood's, was already in print ten years when the State Board of Health was established in Pennsylvania.

NOTE.—The following is a list of nuisance cases decided in Pennsylvania courts prior to 1885. In addition, there were cited in Wood, *Law of Nuisances*, over 3,200 cases decided in other state courts. Thus it is evident that it was not a defective law but a defective administration that marked the time:

Board of Health vs. Kennedy, 2 Penn St. 366, 1845.
Board of Health vs. Hubert, 1 Phil. 280, 1857.
Shuter vs. The City, 3 Phil. 228, 1858.
Burt vs. Smith, 3 Phil. 362, 1859.
Pottstown Gas Co. vs. Murphy, 39 Penn St. 257, 1861.
Smith vs. Phillips, 8. Phil. 10.
Delaware Division Canal Co. vs. Commonwealth, 60 Penn St. 267, 1869.
Wistar vs. Addicks, 9 Phil. 145, 1873.
Weir's Appeal, 74 Penn St. 230, 1873.
In re Haddock vs. Commonwealth, 103 Penn St. 243, 1883.

Protection of Water Supply'

It is with water pollution as with air pollution, legislation antedates hygiene considerations. The dumb brute will refuse a drink from a tainted pail and will pass from oily to clear water. The savage will legislate against throwing refuse into a spring. It is in obedience to a simple gastronomic instinct that man shrinks from polluted water and gives the sanction of society to regulations which guaranty its purity. As in the case of air, the changing condition is not society's attitude toward pure water, but rather society's definition of impurity.

In what I have called the nuisance age the purity of drinking water was guaranteed by the common law. The courts would sustain an action for damages done to a neighbor's cattle or grass through polluting the water supply. Wilfully to discolor, or render impure a public spring was likewise an offence. We have seen that the act of 1769 for Philadelphia prohibited the indirect pollution of wells from overflowing privies.

The Legislature imposed heavy penalties for throwing objects into the Philadelphia reservoirs.* That the law stopped short of preventing pollution of rivers at any point above the reservoir must be

*Acts 12 April, 1828, P. L. 315; 7 February, 1832, P. L. 55; 25 November, 1884, P. L.

due to the fact that it was believed that water purified itself after flowing a few rods. That it was intended that water should be rigidly protected may be seen from the fact that, in 1885, three acts imposed maximum penalties of five hundred dollars, or a year's imprisonment, or both, for injury to roadside watertroughs, springs or reservoirs* and ice-fields.†

The only general acts guaranteeing protection of rivers against pollution were passed to assure the preservation of the fisheries.‡These laws compelled manufacturers to purify their noxious effluents in tanks. At this time Philadelphia was losing over six hundred lives a year because of the pollution of the Schuylkill river. That is to say, that number were dying annually from poisoning. Had inspection existed to locate this poisoning, it is probable that the Legislature would have been willing to make a general law prohibiting manufacturers to erect privies, etc., on the edge of streams. They had previously imposed a penalty, not exceeding five hundred dollars, or imprisonment by separation or solitary confinement at labor not exceeding three years, for exposing poisoned meat with the intention that it should be taken by any horses, cattle or other domestic animals§ or fowl.|| From protection to dogs and chickens and fish to protection of human beings seems an easy step, yet after thirty years it seems as distant as ever.

But the common law had been sufficient wherever invoked to protect private and public water sources. The position taken by the Pennsylvania courts was in substance as follows. You have an inalienable right to a pure supply of drinking water. The courts will protect your water supply wherever it may be situated, whether private well, spring, roadside trough, reservoir or river. If any citizen, industrial corporation** county, town, city†† or the State itself shall threaten the purity of your water supply by the erection or continuance of a privy,‡‡ barn,§§ gas works,*** graveyards,††† or drain, the courts will sustain an action to enjoin them until they shall offer compensation or render such establishments innocuous to your wells, etc. The courts will not admit for an instant the plea of necessity or priority of establishment. "The plea that under any circumstances one man should be permitted to deposit any part of his health destroying filth in or upon his neighbor's premises is simply absurd."††††

*Acts 29 April, 1874, P. L. 93, section 34; 28 April, 1876, P. L. 57, section 4.

†Act 8 May, 1876, P. L. 106. Penalty \$100.

‡1 May, 1873; 8 May, 1876.

§31 March, 1860.

||23 May, 1878.

††Shuter vs. The City. 3 Phil. 228, 1858.

‡‡Haugh's Appeal, 102 Penn St., 42, 1863.

§§Barclay vs. Commissioners, 25 Penn St. 503, 1855.

***Pottstown Gas Co. vs. Murphy, 39 Penn St. 257, 1861.

†††Kinead's Appeal (Pittsburg), 66 Penn St. 411, 1870.

††††Haugh's Appeal.

Judge Thayer's charge to a Philadelphia jury in 1884 was still fresh in the minds of the people of the State. This shows that the Legislature could depend upon the courts to punish every violation of the law which the agents of the former would detect and prosecute. "It is a very old and well settled law that to pollute a public stream is to maintain a public nuisance. It is not only a public injury but it is a crime, and a crime for which those who perpetrate it are answerable in a court of criminal jurisdiction."*

In addition to the liability to civil or criminal action for the pollution of public or private water sources, every borough in the State had for over thirty years possessed specific power to substitute public for private water supply. (See act of 1851.)

Protection of Food Supplies.

Pure foods were likewise guaranteed by law. The common law had protected the buyer against fraudulent sales. Statute laws had from the first punished the adulteration of liquors, and of such provisions as were marketed in the early days. Charters authorized municipalities to regulate markets and fairs, "as may conduce to general interest."† The Legislature had from time to time enacted provisions which protected the State against misrepresentation by the exportation of unwholesome, unsound or unfit biscuits, flour, butter, lard, etc. Stringent legislation demanded the purity of drugs and medicines, and, by 1885, there was a great deal of special legislation with reference to the wholesomeness of meat products and milk. It is true that most of the acts applied to Philadelphia, Pittsburg or special industrial interests, but the essential fact applied to all portions of the State. To sell impure foods was as much a crime and a fraud and a menace to health in Altoona as in one of the largest cities.

At the time, however, the only general act was that of 1869,‡ which punished with heavy penalties the sale or exposure of diseased flesh, unwholesome bread, drink or liquor, flour or other article of food, the adulteration being known. The last three words account for the special acts which followed. Under this law meat was condemned if tainted.§ Veal was unhealthy until three weeks old. Oysters and shell fish were declared unfit to eat during the months of July and August.|| In order to prevent the sale and consumption of unsound meats the law authorized the inspection of cattle on the hoof,** of meat in the market, of fish,†† etc., on board the vessel or in the salesroom.

*Commonwealth vs. Soulas.

†Wartmann vs. Philadelphia, 33 Penn St

‡31 March, 1860, P. L. 401. Penalties, \$600; 6 mos.; or both.

§7 May, 1855, P. L. 463; 31 March, 1860, P. L. 401.

||4 May, 1874, P. L. 250; 10 April, 1873, P. L. 69.

**21 April, 1873, P. L. 899. (Pittsburg.)

††29 January, 1878, 7 Smith 9.

In order that meat products should be more fully protected, the Governor was charged with the stamping out of infectious diseases among cattle, particularly pleuro-pneumonia.* To sell meat taken from premises infected with "pneumonia or other infectious or contagious diseases"—"within two months after such disease shall have disappeared from the premises" had been made a misdemeanor in 1866.† By the law of 1879, the Governor had absolute power to quarantine cattle coming into or possessed within the State. He could "provide for the destruction of infected animals if condemned by medical or veterinary practitioners; for destruction or disinfection of infected articles, premises, buildings, or railway cars; for the appointment of as many medical and veterinary practitioners as he deems necessary and to state remuneration."

For the protection of milk and dairy products, the powers granted were not less sweeping and direct. The act of 1860,‡ imposed a penalty of \$100, six months imprisonment, or both, for the sale or exposure of unwholesome drink—or any other article of food—the adulteration being known. This last clause forced cities to fall back upon common law provisions for pure milk, or to appeal to the Legislature for special acts. Since 1857 it was known that the courts would uphold as a common law right, that of a borough to prevent the sale of adulterated milk in public markets.§ The act of 1775 was still in force which expressly prohibited the adulteration of drinks and foods.|| The law of 1869** had provided for inspection of milk in all boroughs and cities "under such rules and regulations as will protect the people from adulteration and dilution." For seven years the law declared adulteration, with a view to selling, to be a misdemeanor. This law†† defined adulterated milk as follows: "Milk, to which has been added water or ice, and any milk obtained from animals fed on distillery waste or any substance in a state of putrefaction is declared to be impure and unwholesome." Pittsburg had a special act‡‡ declaring milk from diseased cows to be unfit for sale, while the general act of 1866 had prohibited the sale of milk taken from infected cows.

Penalties could not be imposed for the innocent possession or sale of adulterated milk, but the sale could be prevented when once the adulteration was discovered. What the law by inference permitted to all boroughs, may be seen from the powers specifically granted to the board of health of Pittsburg. Milk was to be in-

*1 May, 1879, P. L. 38.

†12 April, 1866, P. L. 101. Penalty, \$500; 6 Mos.

‡31 March, 1860, P. L. 401.

§Wartmann vs. Philadelphia, 33 Penn St. 302.

||18 March, 1775, I Smith 425; 8 May, 1854, P. L. 664; 3 April, 1851, P. L. 320; 20 April, 1858, P. L. 367.

**20 April, 1869, P. L. 81.

††25 May, 1878, P. L. 183.

‡‡12 April, 1872, P. L. 1071.

spected, as well as all dairies and cattle within the city. The inspector had authority to enter "any premises at all times, where milk is sold, or stop any vehicle used in conveying the same and cause a sample to be analyzed."* Finally in all towns with a population of one thousand or more, milk wagons must be marked with the name of the responsible seller, and the locality where obtained or produced.†

It deserves to be noted that the session of the Legislature which established the State Board of Health also improved the milk laws above described. It remedied the defects of former acts by making the dealer responsible for the purity of the milk. To offer for exchange or sale any adulterated milk was declared a crime. Milk was to be sold in cans marked as such. The law states in detail the composition of standard milk, and prohibits the sale "of diluted or adulterated milk, tainted or partly sour from want of proper care in keeping pails, strainers, etc., clean and sweet." Adding to these definitions one other precaution then on the statutes,‡ which prohibited the sale of milk "taken from a cow within fifteen days before parturition or within five days after parturition," and we have as comprehensive and exclusive a definition of pure milk as is possible.

Now, it is true that these extreme laws were enacted in the interests of one or two cities and a few butter and cheese factories in three counties of the State. But the fact that the definition was inspired by the interests of a small group of capitalists does not make it less binding upon every seller and every judge in the State. It merely demonstrates that the Legislature is not unwilling to enact extreme legislation for the protection of health, if only sufficient pressure is brought to bear upon it. Likewise the difference in penalties imposed for defrauding the public directly, or for defrauding them indirectly after having defrauded the butter and cheese factories, does not indicate any difference as to the enormity of the crimes. For selling impure milk to a working woman, the penalty was from \$5 to \$50; for defrauding the factory, \$50 to \$100. The only difference is in the unity of the forces which demanded protection. The cheese factories suffering appreciably from the wrong done were goaded on to a united earnest demand for protection. The women who bought milk by the pint did not appreciate so keenly their wrong, nor could they effect a united effort before their representatives.

There were other dairy products which were subject to adulteration or misrepresentation. The State undertook to guaranty the quality of the butter sold upon its markets. A penalty of \$1,000

*21 April, 1873, P. L. 899.

†25 May, 1878, P. L. 183.

‡10 June, 1881, P. L. 116.

had been imposed for selling oleomargarine as butter* while the manufacture within the State of imitation butter was prohibited.† As in the case of the definition of pure milk, this legislation was undoubtedly passed in the interests of the dairy men of the State. But the reason which they successfully urged for the passage of the bill was that public health required protection against counterfeit butter.‡

Protection against adulterated medicines was afforded by numerous statutes. To adulterate drugs and to use deleterious drugs in the manufacture of liquors were misdemeanors. A license was required for the sale of patent medicines. Pharmacists in Philadelphia must register and pass certain examinations set by the State Board.§ The State designated the qualifications necessary to the practice of medicine within its borders.|| A properly qualified practitioner was to possess the following: "A good moral character, a thorough elementary education, a comprehensive knowledge of human anatomy, human physiology, pathology, chemistry, materia medica, obstetrics, practice of medicine and surgery, and public hygiene." As is seen, the requirements are all that can be demanded to-day. Unfortunately, however, the law made no provisions for the enforcement of this high standard. Too much discretion was thus left to medical institutions, who not unfrequently gave their stamp to men who did not possess the qualifications which the schools were expected to demand in the interest of public health.

Transmissible Diseases.

Statutory permission to control transmissible diseases had never been necessary. Under the common law all municipalities had this right. Under the general nuisance provisions of the charters, the courts sustained quarantine regulations. In 1793 no one questioned the right of the people of Reading to forbid the entrance of goods or passengers from Philadelphia. The act of 1851** had given boroughs the general power to "make such regulations as may be necessary for the health of the borough." The act of 1874†† had suggested to boroughs that boards of health be appointed. The law indicated what measures might be necessary to prevent disease. In addition to the power to abate nuisances, inspect foods, etc., the board of health might take the following steps: pass orders and regulations for the public health; inspect where reasonable belief

*25 May, 1878, P. L. 133.

†21 May, 1885, P. L. 22.

‡Powell vs. Commonwealth, 114 Penn St. 265.

§31 March, 1860, P. L. 401. C9; 14 April, 1863, P. L. 389. 1; 4 April, 1872, P. L. 905.

||24 March, 1877, P. L. 4.

**3 April, 1851, section II.

††23 May, 1874, P. L. 257.

exists of the presence of infectious diseases; appoint health officers and a district physician; afford gratuitous vaccination and disinfection and medical relief to the poor; erect temporary hospitals; compel removal to hospitals of infected persons. A penalty of one hundred dollars might be imposed for any obstruction to the order of the board. -A later act* gave cities of the third class power to enforce quarantine laws within five miles of the city limits.

In addition to these general powers possessed by all cities, certain cities had special acts for the control of dangerous diseases. Reading had exclusive authority within one mile of the limits of the city.† Carlisle had authority to take land outside of the city for a hospital.‡

The Sanitary Committee of Councils of Harrisburg might punish refusal to obey its orders by "fine of two hundred dollars," and the council was obliged to sustain the board.§ Obstruction to the work of the board of health in Williamsport was punishable by a fine of one thousand dollars, or one year's imprisonment, or both.|| Lebanon had similar powers to enforce rules of the health board. Allegheny, Pittsburg and Philadelphia had elaborate provisions for the control of infection which differed from those above enumerated chiefly in the details of administration.** We have already seen the concentration of great powers in the hands of the Governor for the eradication of cattle diseases.††

Vital Statistics.

The most important provisions in this connection were those for the registration of vital statistics. In Pittsburg,‡‡ Allegheny,§§ and Philadelphia||| the notification of infectious cases was compulsory under heavy penalties. In Allegheny any infectious disease was to be reported; in the other two cities the diseases were specified.***

In Lebanon notification might be required. In Williamsport the city had no choice. Physicians were to be fined ten to one hundred dollars if they failed to notify. The law of 1874 gave all boroughs power to "create a complete and accurate system of registration * * * to furnish facts for sanitary inquiries." A later act had directed all boards of health to keep a register of marriages and births. Physicians, midwives, clergy and magistrates must report

*11 April, 1876, P. L. 20.

†11 May, 1871, P. L. 677.

‡28 January, 1873, P. L. 65.

§5 April, 1873, P. L. 581.

||4 April, 1872, P. L. 912.

**Counties were responsible for the treatment of infected poor.

††Supra, p.

‡‡16 April, 1870, P. L. 1194.

§§19 May, 1873, P. L. 253.

|||8 March, 1860, P. L. 130.

***Small-pox, typhoid, typhus, diphtheria, scarlet fever, yellow fever, Asiatic cholera.

upon penalty of five to twenty dollars. It will be observed that the registration of cases and deaths was voluntary with the borough except in the special cases cited. As we shall see the act was about as fruitful as former permissive legislation.

Apropos of registration, it deserves to be noted that there was at the time upon the statute books a general registration act of thirty-five years standing. It had the distinction of being the only State registration law in the United States which had an explanatory preamble. The object of our law was to obtain statistics of births, deaths and marriages, because from them could be "drawn important truths deeply affecting the physical welfare of mankind." The law was never enforced. Its only service is to contribute its testimony to the futility of attempting to solve great problems by legislation without administration.

Organization of Health Authorities.

In the exposition of the laws relating to nuisances, foods, drugs, physicians, transmissible diseases and vital statistics, we have seen that general powers were vested in boroughs and cities. Where boards of health were organized cities were to sustain their regulations and to entrust to them the enforcement of sanitary regulations. The law compelled Philadelphia to organize a board of health. Yet, as with Lebanon, Carlisle, Williamsport, Allegheny, Hamburg and Pittsburg, the mandatory legislation was passed at the request of the towns. The State did not compel any city or borough to organize a board of health. Under charters towns might always appoint health officers. Because this was not done the act of 1851 suggested activities which would naturally have required health boards. This indirect legislation was ineffectual, and led to the act of 1874, which contained a detailed plan of organization for boards of health.

Boards were to consist of the mayor and four citizens, two physicians, to be chosen from districts by the council. The board was to appoint a clerk, a health officer and as many district physicians as seemed necessary. Their salaries and duties, as well as their tenure of office were determined by the board irrespective of the wishes of the council or burgess. The council was to delegate to the board its powers to protect the health. The board once appointed was held responsible for the abatement of nuisances, inspection of privies, streets and food supply; for the regulation of the construction, arrangement, emptying and cleaning of water closets and privy vaults. In short, it was expected that the board would execute the existing health laws as above defined, and have general charge of the health and cleanliness of the borough. As defects in

local health ordinances became apparent, the board was to ask the council for remedial legislation. Any town might organize a board of health. The choice was free. Once made, the State took from the locality the determination of the board's powers. The extent to which these various laws were enforced throughout the State is shown by the fact that in the 574 incorporated towns but 11 boards were organized. The total population protected by organized health authorities was 1,265,227, or 29.5 per cent.*

Cities Protected by Health Authorities, Population.		Percentage of the Population of Their Counties Protected.	
Philadelphia,	847,170	Philadelphia,	100
Pittsburg,	156,389		
Allegheny City,	78,682	Allegheny,	66
Scranton,	45,850	Lackawanna,	51.5
Reading,	43,278	Berks,	35.3
Harrisburg,	30,762	Dauphin,	40.8
Lancaster,	25,769	Lancaster,	18.6
Williamsport,	18,934	Lycoming,	32.4
Titnsville,	9,046	Crawford,	13.0
Lebanon,	8,778	Lebanon,	22.6
New Cumberland,	569	Cumberland,	1.2

Fifty-seven counties, five hundred and sixty-three incorporated boroughs and municipalities and one hundred and twenty unincorporated villages of a population over five hundred had no board of health. Two boroughs, Ashley and Athens, were known to have sanitary committees of councils. The State Board in its second report stated as an extenuating circumstance that "in many places reported as having no board of health, the obvious functions of such a body are discharged more or less thoroughly by the mayor or burgess and councils, through the medium of a sanitary committee."*

NOTE.—Among the cities which were without health boards, I give the following in groups according to population.

Cities Having a Population Over 10,000.

Allentown,	18,063	Norristown,	13,063
Altoona,	19,710	Pottsville,	13,253
Chester,	14,997	Shenandoah,	10,147
Erie,	27,737	Wilkes-Barre,	28,339
Easton,	11,924	York,	13,940

*Report of 1886, p. 569.

Those With a Population Between 5,000 and 10,000.

Ashland,	6,052	Johnstown,	8,380
Bethlehem,	5,193	Lock Haven,	5,845
Beaver Falls,	5,104	McKeesport,	8,212
Bradford,	9,197	Meadville,	8,860
Bristol,	5,273	Mahanoy City,	7,181
Carlisle,	6,209	New Castle,	8,418
Chambersburg,	6,877	Oil City,	7,315
Carbondale,	7,714	Pottstown,	5,305
Columbia,	8,312	Pittston,	7,472
Corry,	5,227	Phoenixville,	6,682
Danville,	8,346	Shamokin,	8,184
Dunmore,	5,151	Sharon,	5,684
Franklin,	5,010	Tamaqua,	5,730
Hazleton,	6,935	West Chester,	7,046

Over seventy per cent. of the population and ninety-eight per cent. of the area of the State had no health administration, no health statistics, no registration of deaths, no notification of infectious cases, no hospital provisions and no inspection of foods. The small portion of the State which had boards of health was thus constantly menaced by the negligence of the surrounding sections. The Philadelphia councils memorialized the Assembly and declared that the State was quite unprepared to check the spread of transmissible diseases.*

The sanitary condition of portions of the State outside of the larger cities was indeed shocking. The air and water of Pittsburg testified to the presence of numerous noisome slaughter houses on the banks of the Monongahela and Allegheny rivers. Eye witnesses tell the conditions in the smaller towns. Millerstown was constantly suffering from scarlet fever. Typhoid, too, was raging in the summer of 1885. A petition from sixty citizens states that the condition of the town was so bad that interference† by the State was desired. The hotels emptied their refuse into drains that opened into the streets under the sidewalk. The town council refused to take any steps in the matter.

Towanda, the capital of Bradford county, set an example to the numerous towns on the Susquehanna. Privy vaults were drained into wells. They were seldom or never cleaned. The bank of the river was the common dumping ground for filth, garbage and refuse of all kinds. The water supply was taken partly from a watershed

*Senate Journal, 1885, p. 152.

†State Board of Health Report, 1885, p. 157.

of questionable character and partly pumped from the river below the old dam. It was not filtered. The gutters were open, and allowed to grow up with rank grass or weeds. Every third citizen suffered in the summer of 1885 from filth diseases. The sewage of the town, without disinfection or flushing, passed into the river whose waters were drunk partly by the town itself, and later by other neighboring towns, such as Wilkes-Barre, etc.

At Williamsport, the capital city of Lycoming county, the health officer had just begun a crusade against dairies and dumping grounds. The city was pouring all sorts of filth into the dumps upon the river bank. This filth was carried into the water supply of Milton, Lewisburg, etc. The dairies of the county were probably described as no others in the State. Williamsport was fortunate in having as its health officer for twenty years a sanitarian of first rank. The stables in its vicinity were characterized as "cow pillories" and "cow penitentiaries." Milk was not only filthy because of manure-covered udders and sides, but cream was extracted and water added before it came upon the market. When an intractable dairyman said he would jump into the river before he would clean his cows the health officer said, "Then, jump! you will thus prove yourself a public benefactor." A dairy at Mt. Oliver, whence the milk went to Pittsburg infants, was characterized as an "unmitigated nuisance." "The air was heavy and the stench so villainous that I made no extensive notes of inside surroundings, but hastened to the outside world where I carefully and prayerfully contemplated it from a safe distance."* The inspector suggested as a remedy, "to tear down, burn or blow up the stable and to disinfect or fumigate the ground."

Within two miles of Pittsburg the drainage of this stable and also from other stables, one large bathing house and two or three privy vaults were allowed to flow through Mt. Oliver, and at Fernwood, Delaware county, about the same distance from Philadelphia, no effort was made to drain cesspools, which were ill-smelling all about the neighborhood. One well is cited into which privy contents drained. The water of the well was of greenish yellow color. Throughout the village there was the worst kind of drainage. "The towns and cities of the Schuylkill meritoriously wash themselves in that limpid stream, and so far do well, but unhappy Philadelphia, with the typhoid virus creeping through her veins, shudders as she unwillingly drinks their defiled washings. That they do this at their peril, the story of afflicted Plymouth only too clearly demonstrates, for let it not be forgotten that Philadelphia sowed the seed from which death has just reaped so fearful a harvest in that far off mountain village.†

*State Deputy Inspector, S. B. H. Report, 1886, p. 209.

†Address State Board of Health, 1885, P. 3.

In New Castle, Lawrence county, a town of 10,000 inhabitants, a stagnant filthy pool of water covering an area of about two hundred and fifty feet in length and an average of about two feet in width, was allowed to stand in a thickly settled portion of the city. At Eagle, Chester county, the stench from a certain piggery sickened residents half a mile away. In West Newton, Westmoreland county, a slaughter house made life a nightmare. "No less than ten sewers were found above the influent pipe of the Allegheny water works." At Carlisle, the county jail was so poorly ventilated and so unsanitary that three months of confinement broke the health of the prisoners. The orphan schools and almshouses were in a most deplorable state. Such as existed were often disgustingly filthy. The drains were defective. Bedding was filthy. School rooms and bed rooms were so crowded that the children had often only one hundred and twenty-one to one hundred and eighty-one cubic feet of air.*

As for the condition of the farm yards which supplied the cities of the State with dairy and vegetable products, the following stanza, written by a celebrated sanitarian of New York, gives a perfect picture:†

With what anguish of mind I remember my childhood,
 Recalled in the light of a knowledge since gained,
 The malarious farm, the wet fungus-grown wildwood,
 The chills then contracted that since have remained,
 The scum-covered duckpond, the pig-sty close by it,
 The damp shaded dwelling, the foul barnyard nigh it,
 But worse than aught else was that terrible well,
 And the old oaken bucket, the mold-crust'd bucket,
 In fact the slop bucket that hung in the well.

Nor were the rural districts the only offenders. Nowhere were conditions more unsanitary than in the outskirts of Philadelphia and Pittsburg. The latter town breathed air and drank water contaminated by sewage and slaughter house refuse. The health authorities made no effort to cleanse the dairies which happened to be just outside the limits—a power which is not exercised even at the present day. About Philadelphia similar conditions prevailed. The manufacturing suburbs allowed filth to accumulate and disease to spread unchallenged. The beautiful little streams which abound

*At the Soldiers' Orphan School at Mercer the buildings were neglected, out of repair and gloomy. There were no fire escapes. Bedding was filthy. Blankets were washed every summer, comfortables never. Clothing was threadbare and rags were seen on all sides. Food was insufficient; little milk. Water was inaccessible and inadequately used for cleaning. Privy accommodation was insufficient. All the ground in the neighborhood was unwholesome. In one bed room fifty-eight boys had one hundred and eighty-five cubic feet of air each; in one school room forty-eight boys had one hundred and twenty-four cubic feet of air each; in another fifty-six boys had one hundred and twenty-one cubic feet of air each; in two play rooms, for one hundred and twenty boys and twenty-six boys, the average air space was sixty and three-quarters and forty-five and two-thirds cubic feet respectively. See Report of Inspections, 1886.

†President Bayles, New York Health Board, New York Herald, December 8, 1888.

west and north of the city were lined, as indeed they are today, with loathsome privies and sewer vents. The aristocratic culture centers like Rosemont and Bryn Mawr were as unprotected as Towanda or Braddock, and nuisances were employed to extort a higher price for property. This sort of blackmail prevailed until the State Board of Health put an end to it. The story of Herrigan's pigs, and his incarceration reads like a fabric of the imagination fed on mediaeval romance. Nothing makes it appear real until we remember the piggeries and garbage ferments which pollute the atmosphere of South Broad street in 1900.

Just what the total neglect of health cost the State annually we shall never know. We do not know how many died or how many were sick from preventable diseases. Outside of three or four cities no records were kept. The Philadelphia councils, in their memorial stated that one out of every five deaths in the State was due to preventable diseases. The State Board of Health estimated that fifteen million dollars would not cover the annual loss, when the economic value of the lives lost was added to the unproductive expenditure entailed in the care of the sick, loss of wages, cost of burials, etc.

Such was the condition which confronted the Legislature in 1885. Deplorable neglect existed in spite of the fact that legislation already on the statute books granted every borough council in the State "absolute authority for the removal of nuisances prejudicial to the public health, and the adoption of measures necessary to control and stamp out infectious diseases."* The defect was seen to be in the machinery of administering the laws. As under the common law, communities were depending upon private citizens to enforce the laws regarding public nuisances. An officer was needed in every community to assume responsibility for the enforcement of the laws. Secondly, it was necessary to bring upon every locality pressure from above to compel it to protect the health of its citizens.

The Legislature adopted the suggestion of the Philadelphia councils and undertook to remedy the conditions by establishing a State Board of Health and Vital Statistics. The double duties of the Board are seen to be complementary. The Board of Vital Statistics was to furnish the Board of Health with a numerical statement of each year's life history. The Board of Health was, through its secretary, to utilize these facts in the execution of the duties imposed by the act.

*Secretary Lee, report of 1885, p. 43.

CHAPTER IV.

Duties and Powers of the State Board of Health and Vital Statistics.

I. Organization.

The act of 1885 provided that the central health authority should consist of five physicians of ten years' practical experience, and one civil engineer. The board was itself to elect its executive officer at a salary of \$2,000 per year. The members of the board were to receive no compensation. The actual expenses, however, should be reimbursed. Meetings were to be held once in six months at least. The Legislature appropriated \$5,000 for the use of the board, or \$3,000 per annum in addition to the salary of the Secretary.

The act creating the board with the foregoing powers and duties was signed June 3, 1885. The following month, July 2, the Governor's appointees met at Harrisburg, took the oath of office and organized as the State Board of Health and Vital Statistics.* Philadelphia had four representatives, Pittsburg and Erie, one each. The rural districts were not represented. After Dr. Lee, of Philadelphia was made Secretary, Easton, having then a population of about 12,000, was given a member. With the exception of one appointee from Lewisburg, rural districts have never to this day been represented on the Board.

The law of 1885, assigned to the same men both executive and statistical functions. They were both to execute health laws and to collect and analyze sanitary information. The one function was to exercise judgment, to advise, to condemn; that is, to enforce a sanitary policy; the other to study, record and classify data. As administrator, the Board of Health was to consult the vital statistics gathered by itself as statistician. The statistician was to have no object in arranging the material, but to guide the activities of administrative officers.

In its capacity as statistician, the State Board was given general supervision of the registration of births, deaths, marriages, prevalent diseases and practitioners of medicine and surgery. It was to prepare the necessary forms, methods and blanks for obtaining and pre-

*Philadelphia: Dr. Pemberton Dudley, Mr. Rudolph Hering, Dr. J. F. Edwards, Dr. Benjamin Lee. Pittsburg: Dr. J. M. McClelland. Erie: Dr. Edward William Germer. Easton: Dr. David Engleman.

serving such records; and to insure the faithful registration of the same in the several counties of the State as well as in the central bureau at the capital. These statistics were to be studied with a view to determining the effect upon health of various localities, employments, conditions, habits, beverages and medicines. Such statutory amendments were to be suggested as the Board might deem necessary for the thorough collection and organization of information from all parts of the State. These recommendations and data upon which they were based, were to be submitted to the Governor annually, and to be disseminated throughout the State.

The law provided that local boards should supply the information demanded by the State Statistician. The object of the Legislature in imposing upon localities these duties and in conferring upon the State Board these responsibilities had been expressed in the registration act of 1851. "Important truths deeply affecting the physical welfare of mankind are to be drawn from the number of marriages, births and deaths occurring during a term of years."

Upon the Board the act imposed the following duties: 1. General supervision of the interests of the health and lives of citizens. 2. The special study of vital statistics. 3. Investigations and inquiries regarding disease, especially children's diseases and those of domestic animals. 4. Investigation of sources of mortality. 5. Of the effects upon health of localities, employments, conditions, habits, foods, beverages and medicines. 6. Dissemination of information upon these and similar subjects. 7. Sanitary inspection of public institutions. 8. Codifying of the sanitary laws of the Commonwealth and suggesting amendments. 9. General supervision of registration. Local authorities were instructed to send to the State Board copies of all sanitary reports and publications and such information as might be requested.

The powers given the board were as follows. 1. To enforce such regulations as will tend to limit the progress of epidemic disease. 2. To abate and remove nuisances or cause of any special disease or mortality—where no local board of health exists whether in cities, boroughs, districts or other places, or 3. Where the sanitary laws or regulations of a local board are inoperative. 4. To require reports from all public dispensaries, hospitals, asylums, infirmaries, prisons, schools, and other public institutions, and from proprietors, managers, lessees and occupants of all places of public resort when necessary for the discharge of previously mentioned duties. Finally, 5. To engage suitable persons to render sanitary service, to make or supervise practical and scientific investigations and examinations requiring skill and to propose plans and reports relative thereto.

How the Board interpreted its functions may be judged from the

committee organization and from the address issued to the people of the State. Eight standing committees were appointed as follows.* 1. Executive. 2. Registration and Vital Statistics. 3. Preventable Diseases and Supervision of Travel and Traffic. 4. Water Supply, Drainage, Sewerage, Topography and Mines. 5. Public Institutions and Places, and School Hygiene. 6. Adulteration of Food, Beverage and Drugs. 7. Explosives, Poisons and Other Special Sources of Danger to Life and Limb. 8. Sanitary Legislation, Rules and Regulations. The work thus outlined was certainly comprehensive. In the address, the Board assured the Commonwealth that the plan as given would be executed "by quick, steady, carefully considered work."

The address of the Board met with a hearty response from the press, the pulpit, town councils and the general public. Complaints and requests for assistance came from every portion of the State. The citizens of Towanda wished aid in compelling their town council to abate a drainage nuisance, Allegheny City desired protection against the slaughter houses without her jurisdiction, which polluted her water supply. Philadelphia urged the necessity of sanitary control over districts just outside her limits. From Lancaster came complaint of tuberculous teachers and from Summit Hill the demand for provisions to prevent school epidemics.

The plans of the Board were heartily endorsed by the people of the State, especially by the press. "The Board has been met more than half way, entire columns having in numerous instances been devoted to its sober utterances to the exclusion of lighter and more attractive reading."†

Unqualified endorsement was received also "from the clergy, who exercise a controlling influence over the community and specially over its more influential, intelligent and law-abiding members." An inspector writes that the literature of the board is in great demand. "Members of town councils read, think it just the thing and pass it around to their friends as they would Sunday school or temperance tracts."

It would appear, therefore, that the board began its work under very favorable circumstances. It had been created by the will of the State and had been given ample powers to execute the most statesmanlike sanitary program. The public endorsed heartily the positive plan of the Board, and there was every reason to believe that the Legislature would fulfill its implied pledge by enacting such supplementary laws as would render the board most effective.

*Report 1885, p. 20.

†Report 1886, II, p. 8.

CHAPTER V.

The State Board as Statistician.

As statistician, the State Board began in an entirely new field, Pennsylvania, as a State, had never made any pretense of collecting and classifying vital statistics. An obsolete law of thirty-five years standing had declared that "important truths deeply affecting the physical welfare of mankind are to be drawn from the number of marriages, births and deaths occurring during a term of years." But this registration act was never enforced, and its only service was to commit the State to a belief in the utility of complete vital statistics. The only statistics available in 1885 were those for Philadelphia, more or less complete since 1819, for Pittsburg since 1860, and Allegheny, Williamsport and two or three other cities which had recently begun to enforce the special acts authorizing the registration of births, deaths and marriages and the notification of infectious diseases. Therefore except for the census returns there was on record not even a good guess for the State as a whole. As for the census returns, the reports date back only to 1850, and the returns of these four censuses were "not worth the paper they were written on."*

The new board had, therefore, no old methods to deplace and no clerical traditions to overcome. Theirs was the privilege of bringing order out of chaos, of introducing the most modern devices, of giving graphic and immediate proof of their efficiency. England had experimented since 1834, and the great statistician Farr had produced an efficient guide, while the various local health officers and the Registrar General were publishing annual reports which were practical manuals on vital statistics. Dr. Russell had published the "Evolution of Sanitary Administration in Glasgow" and Simon had put within reach of laymen, the relation of vital statistics to social welfare. Massachusetts had experimented since 1840, and New York and New Hampshire since 1848. Philadelphia and Pittsburg were giv-

*Introduction seventh to tenth censuses—Vital Statistics.

ing a great deal of attention to the collection and analysis of their local statistics.

Dr. Billings had presented to the National Board of Health and in the census of 1880 masterful criticisms of statistical methods employed by sanitary authorities in England and America.

Our Board had the benefit of their mistakes and their successes. The work could not have been begun at a more favorable time.

The function of vital statistics was as keenly appreciated then as now. In 1793, Matthew Carey had demonstrated by parish records the close connection between overcrowding and the dissemination of disease. An increased knowledge of statistics had made possible stringent notification, isolation and vaccination laws for such cities as had requested them from the Legislature, viz: Philadelphia and Pittsburg. The rapid development of central control in England, the birth place of local self government, was due to statistical studies by her sanitarians. The world had adopted Farr's figure and was accustomed to regard vital statistics as a "barometer" or again as "pickets" which tell of danger and describe its nature and direction. In order to appreciate the services rendered by our State Board in its statistical capacity, it is well to review the functions of vital statistics.

Statistics have been defined by Levasseur as the "numerical study of social facts." "Statistics" is of the same derivation as "statist" and "statesman." They have always been distinguished from mere "facts" in that statistics are instruments in the hands of the statesman. Wherefore the term is limited to "social" facts. Statistics suggest action, social control of future contingencies, social mastery of the forces whose actions they chronicle. The social facts are stated numerically, because only numerals mean exactly the same to all readers and in all places. "The *sometimes* of the cautious is the *often* of the sanguine, the *always* of the empiric and the *never* of the sceptic, while the numbers 1, 10, 100, and 10,000 have but one meaning for all mankind."*

Any group of social facts is capable of statistical, that is of numerical treatment. Industrial statistics show us in numbers the wide range of facts pertaining to industry. Monetary statistics summarize the unquestioned facts about money. School statistics tell us the number of children of different ages in a community, the number of days of attendance, whether native born or foreign born are given the best opportunities, and whether colored children play truant, etc. Vital statistics, therefore, ought to give a "numerical exposition of facts with reference to the life history of communities

*Dr. Guy, quoted by Newsholme, Vital Statistics, 1899, introduction.

or nations." Any facts influencing vitality should be subjected to statistical treatment. So far as occupation, domicile, social condition, sex, age, color, nativity, diet, plumbing, pleasures, beliefs, educational methods, etc., may or do influence the health of the individuals making up any society, their effects should be given statistical form. Whatever hurries or retards marriages, increases or decreases the number of births or throws light on the causes of sickness and death, should be found numerically treated in the reports of local and State health authorities.

The object of gathering these social facts for analysis is not to furnish material for future historians. They are to be used in shaping future history. They are facts collected with a view to improving social vitality, to raising the standard of life and to eliminating permanently those forces known to be destructive to health. Unless they are to be utilized in this way, they are of interest only to the historical grub. The State cannot afford to erect a statistical office to serve as a curiosity shop. Unless something is to be done to prevent the future recurrence of typhoid epidemics, such as our cities, Pittsburg, Philadelphia, Allegheny, Allentown, etc., have annually experienced, there is no special reason for asking the Public Printer to make tables which indicate the great cost of this preventable disease. Unless someone is at hand to abate the causes of transmissible diseases and to check infection at its inception, the notification of infection is of little social utility. Statistics presume efficient administration. An inefficient health officer will not care to gather statistics. If some one else furnishes him with statistics they are as a lantern to a blind man.

On the other hand the earnest intelligent health officer relies upon statistics for an understanding of his field. A tax collector cannot discharge his duties unless he knows the address of every debtor. A police bureau cannot protect society unless it knows the character and haunts of the degenerates. A health officer cannot execute the law for the protection of society's health unless he knows the haunts and habits of disease. For this he must look to vital statistics.

But the greatest service of vital statistics is their educational influence. Health officers cannot rise far above the standard of culture of those who provide the means for administering the law. The tax paying public must have a belief in the economy, utility and necessity of sanitation. Power and funds must come from the town councils and state legislatures. To convince and move these keepers of the purse, reliable vital statistics are indispensable. The socialization of information always follows its dissemination.

Wherever statistics are wanting sanitary administration is defective. Wherever they are complete, sanitary administration is efficient. Defective vital statistics and low ideals of cleanliness and health go hand in hand.

From the accompanying table we may judge to what extent the vital statistics of our State are adequate to guide the administrator and legislator, and to what degree they serve to educate the general public.

In the annual reports of the State Board of Health these facts appear in alphabetical tables. These tables are not digested. The items "number of towns reporting births, deaths, marriages and deaths with no corresponding cases" are not contained in the annual reports. The annual death rate is not given. Deaths due to other causes than diphtheria, scarlet fever, typhoid, measles or consumption are not classified. It needs but a glance at the table to indicate the difficulty. The local boards do not furnish the State Board with the facts.

From this table it appears that our Board of Vital Statistics has never secured any one group of facts for the entire State. Until 1895, the number of localities which reported to the State Statistician even so much as the names of the members of the health boards, never exceeded twenty-four and averaged only ten. During that time, eight is the largest number that ever reported the total number of deaths. There has never been a year when the population represented by these reports exceeded fifty per cent. of the population of the State, while the last published returns refer to less than forty-five per cent. In 1890, there were 785 incorporated towns in the State, of which only thirteen reported to the State Board of Health. In the current report only 203 towns reported or about one-fourth of the boroughs in the State.

But not only are there no records for the greater part of the State but such records as we have are very incomplete. One year a board will report and the next year nothing is heard from it. During the past five years the State board has at some time heard from over six hundred different boroughs. Yet only sixty-four have sent reports every year from 1894-1898. These have sent general death returns only since 1896, and in 1898, seven did not report the total number of deaths. Where blanks are given for towns under 10,000, this means lack of knowledge quite as often as absence of disease. For instance in the years 1895-1897, there were credited to diphtheria one hundred and twenty-four, fifty-seven and twenty-seven deaths from towns which reported no cases of diphtheria. Again in the years 1894-1897, typhoid deaths to the number of fifteen, sixty-one, forty-nine and thirteen are recorded from towns which report no cases. No attempt is made to secure notification of consumption where death does not result yet it is noticeable that 3,500 deaths should be reported after the health officer has indicated that there were no cases. In 1897, twenty-four boards reporting 868 cases of diphtheria, scarlet fever and typhoid fever and 102 deaths did not take the trouble to state the population of their boroughs, while in 1898 the following fifty-four did not report the total number of deaths.

Town.	Population.	Secretary's salary.	Town.	Population.	Secretary's salary.
Austin,	3,000	.....	Millerstown,	1,108	.....
Bellefonte,	3,800	\$75	Minersville,	3,504	\$50
Bloomsburg,	8,000	60	Nescopeck,	1,000	.....
Cokeville,	664	12	New Wilmington,	800	.....
Clarksville,	200	10	Oakland, .....	.....	.....
Crafton, .....	.....	.....	Orwigsburg,	1,290	25
Dallastown,	1,200	.....	Oxford,	2,300	.....
Danville,	7,993	50	Parkesburg,	1,514	10
Dayton,	500	10	Petersburg,	700	.....
Delaware Water Gap,	467	.....	Plymouth,	9,344	120
E. Stroudsburg, .....	.....	.....	Polk,	500	.....
Eldred, .....	.....	.....	R ynoldsville,	4,000	25
Frackville,	2,530	50	Sharon,	10,000	50
Fredonia,	650	.....	Sharpsburg,	6,000	25
Freeland,	6,500	40	Sheradan, .....	.....	.....
Glen Campbell, .....	.....	.....	Steelton,	9,250	120
Glen Rock, .....	.....	.....	Strasburg, .....	.....	.....
Hawley,	2,000	.....	Summit Hill,	3,500	17
Hopbottom,	299	.....	Tamaqua,	1,000	120
Kennet Square,	1,600	50	Taylor,	5,000	.....
Hazleton,	1,500	10	Tioga,	60	25
Lansforde,	5,000	72	Tyrone,	7,000	120
Ligonier,	1,300	.....	Watsonstown,	2,150	.....
Lewisville,	1,000	.....	Waynesboro,	5,500	75
Manheim,	2,070	15	Weatherly,	2,961	20
Manor Station, .....	.....	.....	Wellsboro,	3,500	25
Mifflinburg,	1,600	.....	York Haven,	800	15

It is noted that the age and sex distribution of deaths is not given. Nor are there any statistics as to density of population. No causes of death receive mention but diphtheria, scarlet fever, typhoid, small-pox, measles and consumption. According to the tables themselves only seventeen per cent. of the total mortality was due to these six causes. There are therefore 83 per cent. of the deaths reported in the table which are not accounted for except as two or three of the cities have analyzed local returns. An English rural district will return the age and sex distribution of deaths due to the following in addition to the six above mentioned causes: whooping cough, diarrhoea and dysentery, cholera, rheumatic fever, erysipelas, pyæmia, puerperal fever, ague, cancer, phthisis, pneumonia, bronchitis and pleurisy, heart disease, injuries, other diseases. The absence of such classification in our tables indicate one of four things: The physicians do not distinguish or they do not realize the importance of the information to science and social economy; or the State Board cannot obtain the information or could not utilize the information if at hand.

Finally a most serious defect in our statistics remains to be noted: namely, at their publication they are at least two years old. In

May, 1900, the health officer who would learn the distribution of transmissible diseases in the State must content himself with the history of the year 1897. The disease centers of the present month will not be notified to the rural health authorities until December, 1902. How the current table (1897) may mislead is seen from the typhoid statistics for Philadelphia. The table gives about 3,000 as the number of cases, whereas during the year 1899, there were nearly 10,000 cases. The table gives two cases of small-pox, too inconsiderable to arouse the schools and town authorities to enforce the vaccination laws. At the present time there are several hundred cases in the State. Our use of such vital statistics as we have is similar to the use of a burglar alarm which sounds twenty-four hours after the current is started.

It is doubtless true that these tables mislead no one. But the reason is plain—no one uses the table for the purpose of guiding him in the administration of sanitary regulations. There can be no doubt but these tables would, if timely, stimulate officers to make ready and complete returns for the value of such action would then be appreciated. Without the notification the State Board cannot act nor can it be of any service to the local boards. The object of statistics is not only to find out how many have died in the past, but to locate present dangers, not simply to find out how many places have been unhealthy but to learn to minimize and localize unhealthy conditions.

Without further analysis of the table it is apparent that such statistics are inadequate as a guide to the administrator, the legislator or the general public. The situation would be grave enough, if the only harm to the State were the censure to which she subjects herself in presenting such returns as the vital statistics of the State, when they are but partial returns of a small portion of the State. But the real injury to the State is the defective sanitary administration of which such statistics are proof positive. Incomplete, unrelated vital statistics never accompany method in administration. System in classification of experience is the mark of the officer who acts according to law rather than impulse. Because our local and State boards of health are without such classified data for their respective administrative areas, their sanitary science has degenerated into mere sporadic nuisance abatement, a kind of blind man's buff.

Likewise the State authority is working in the dark. They do not know the number nor the whereabouts of the enemy. They must fight like helpless blind men, striking only after their constituencies have suffered severe blows.

That this would be the outcome of its statistical activities was apparent to the State Board at the outset. In its earliest report,

three months after appointment the committee on registration and vital statistics declared that "until further legislation is obtained it will not be possible to obtain statistics sufficiently general to warrant their publication." The Board asked the Legislature for a law which would establish local registration officers, and provide for a statistical expert to analyze the returns. Their recommendation was disregarded, as have been subsequent appeals. Since 1894 a vast amount of material has been sent to the Board but the appropriations do not permit of such clerical assistance as is necessary to utilize properly even these meagre returns.

In Great Britain, Germany, and Austria, as in such states as Massachusetts, Connecticut, New Hampshire and New York, numerous experiments have been made since the registration of deaths was begun in England in 1834. It has been demonstrated by each in turn, that complete vital statistics can be obtained by a state, as by a city, only when the public enlists the services of those who have primary knowledge of births, deaths, burials, marriages and transmissible diseases. The first registration officers are therefore the physician, midwife, minister, magistrate, undertaker and sexton. The other officers are mere recorders and classifiers. It has been found to be essential that each administrative unit have one registration officer to record and classify the returns. If we were to follow the example of those states which have complete vital statistics, we should then have the following registration machinery: For the locality, the physician, midwife, undertaker, minister and the recording clerk. For the county, an expert clerk who records and classifies returns from the sanitary subdivisions of the county. For the State an expert clerk, who is in constant touch with the county statisticians. Inasmuch as none of these find place in our present organization, it is manifest that many modifications are necessary.

The chief difficulty presents itself in the organization into a statistical staff of those upon whom the whole system must rest, viz: those unofficial persons who have primary knowledge of the facts. The first method which suggests itself is to make compulsory such registration. There can be no doubt that society has the right to demand this little social service from physicians, midwives, parents and undertakers. So far as births and deaths are concerned compulsory registrations under penalty for neglect can be relied upon for approximately adequate returns. Property rights are dependent upon such records in many cases. When these interests are absent mandatory legislation is generally successful. Wherever local officers are provided for the utilization of these facts approximately complete returns exist, as in Massachusetts, New Hampshire, New York and Great Britain.

With regard to deaths, most states have a provision which guarantees registration, as has this State in its larger cities. If a certificate of death is required before interment or removal of the dead we can be sure of complete death returns.

But sanitary science is chiefly concerned with preventing sickness, and to that end it is infinitely more important to have prompt returns from infectious cases, than from deaths. Both the cost and danger to society from preventable diseases are imperfectly represented by the number of deaths, for even under like sanitary conditions medical skill could gradually reduce death rates. How inadequately the number of deaths from transmissible diseases represents the cost or the danger to society may be seen from the following tables.

	1897.		1895.	
	Deaths.	Cases.	Deaths.	Cases.
Diphtheria,	2,382	9,841	7,278	963
Scarlet fever,	387	5,942	5,478	462
Typhoid fever,	985	7,104	8,671	1,405
Small-pox,	2	2	331	45
Total,	3,756	22,852	21,758	2,775
Percentage mortality,	16.5	.....	12.7	.....

Twelve towns in Schuylkill county, 1894-1897.

	Deaths.	Cases.
Diphtheria,	203	809
Scarlet fever,	67	486
Typhoid,	49	206
Total,	319	1,401
Mortality percentage,	21.5	.....

It need only be recalled that the germs from a patient who happens to recover are as infecting as those from one who dies. "Death is the ultimate and most severe injury that any disease can inflict. But short of death there may be disablement, permanent or temporary; loss of wages; loss of employment; loss of education; increase of home labor; increase of sickness outlays; increase of worry, anxiety, annoyance; disorganization of the household; general impairment of social efficiency."* The best guarantee against such loss is notification of infectious diseases.

*Dr. Leslie McKenzie. Annual Report as Health Officer of Leith, 1897.

The law has recognized this by making notification of infectious diseases compulsory in cities. But human life is as sacred in the country as in the city and disease germs as impartial. It remains for the State to recognize the necessity of the notification of infectious cases in all sections of the State, townships as well as cities. After suitable administrative machinery has been provided in rural districts for collecting and utilizing this information, it may still be found expedient to offer compensation for timely notice of danger. Even in the cities where more or less complete returns are already at hand, the policy of rewarding those who notify would doubtless reveal here as elsewhere, that under the voluntary system a large percentage of cases are never reported to the health officers.

The only possible objection to compensation is that it would involve a large expenditure. Were this true, it would still be cheaper to pay doctors for notification of disease than for attendance upon the sick where disease runs riot.

The experience of Great Britain during ten years application of the Infectious Diseases Notification Act* is important. That act made it optional with sanitary districts outside of London to adopt the act which provided for compulsory notification of infectious diseases within twenty-four hours of their identification on penalty of forty shillings. The fee to be paid physicians for reporting was two shillings six pence for private practice and one shilling for public practice. The benefits of notification soon became apparent and by 1899 most all of the districts had adopted the act. But the delinquent communities remained a menace to the more progressive ones and in June, 1899, Parliament almost unanimously passed an act making it necessary for every sanitary district, rural as well as urban, to enforce notification.

Notification Great Britain, 1898.

	Population.	Births and deaths.	Notification of infectious cases.
Brighton,	122,300	£31-11-8	£122-4-6
Birkenhead,	112,094	43-19-6	147-15-0
Manchester,	539,079	198-15-2	284-12-6
Southport,			22-11-0
Liverpool,	633,645	192	570-0-0
Salford,	215,702	69	21-7
Oldham,	148,288	40	57

*30 August, 1889, 52-53 Victoria Ch. 72.

In Pennsylvania the total cost for notification of diphtheria, scarlet fever, typhoid and small-pox for 1897 would have been, at the rate of fifty cents per case, about \$20,000, or about three mills per capita.

In return for that sum we would have a statement of every infectious case in the State, its location and probable origin, the sanitary condition of the premises, the age and sex of the patient, the name and location of the dairyman, meat man, grocer, school attendance, etc. This information would not only appear at the end of the year, in State and county summaries but would be available in each administrative unit the day the case becomes known to the physician.

In England the central government pays none of this cost. But there is no reason why in Pennsylvania this should not be done. It is of vital importance to the State at large that this information be promptly obtained. It is of more importance to Philadelphia that typhoid in the Schuylkill valley be notified than that the cases in that city be notified. So it is of the utmost importance to authorize portions of the State that small-pox be notified in Pittsburg or Philadelphia. The benefits being common to all sections of the State, it is but just that the expense be shared by all.

But after all the question is not who shall bear the burden but who may procure the benefits. Compensation for notification of disease wherever tried is looked upon not merely as a duty or a safeguard but rather as an actual remunerative investment. In the years 1898-1899 this State was visited with small-pox. Over 1,200 cases occurred, only 300 of which were ultimately credited to cities. The spread of the disease in those districts where notification was neglected even when sparsely settled was very great. In the cities where the first cases were promptly notified the disease did not spread. Had the State received notice of the first case, there can be no doubt but this epidemic could have been arrested when less than one hundred people were stricken. Taking 100 as the number for which the State must have paid notification fees, the expense would have been \$50. In addition would have been the expense of vigilant supervision. But the disease cost in loss of labor alone, regardless of doctors' bills, nurses, medicines, etc., at the very least, \$22,000. To have saved this sum by the expenditure of \$50 would have been a very profitable investment.

Unfortunately there are a few physicians still in active practice who selfishly refuse to warn the State of the presence of potential calamity and willingly profit from the consternation produced by such an epidemic as that above mentioned. This class of practitioners is fast losing both its influence and its respectability and cannot alone prevent the adoption of progressive measures. But unfortunately there is also a large number of most excellent practi-

tioners who, while recognizing the social necessity of notification still regard it as a detriment to their business. Too earnest and sincere and respectable to offer any intentional obstructions, yet the very conviction of personal injury prevents them from advocating the measure as they must if they regarded it as a pecuniary benefit to the profession.

Their attitude is due to a misunderstanding as to the source of their income. Statistics show that the field for medical practice has widened as the transmissible diseases have been put under control. Both are effects of the same cause, a rising standard of life in which one of the most important factors is good health. In the present also, it may be seen that the profession receives most and gives most, the further it is from the area of prevalent transmissible diseases. The saving of human life has the same effect upon the monopoly power of the physicians as the raising of the standard of the profession. By raising its entrance requirements the University of Pennsylvania in 1899 decreased the number of first year medical students by over one hundred, thus diminishing professional competition. Should the physicians themselves by notifying infection and aggressively furthering sanitary measures save 10,000 lives annually they would increase their monopoly force by a geometrical ratio. At present the physician has an average of 670 patients. If transmissible diseases were reduced one-half, in ten years this number would increase to 700 and hence onward geometrically and arithmetically.

It is interesting in this connection to observe with what rapidity the veterinary profession has come to regard the eradication of infection as the measure of future profits as it has indeed been the secret of their past success. High professional profits and a high standard of life go hand in hand. The standard of life rises with the abolition of infection. Physicians should stop to reflect that dyspepsia and gout are more remunerative than typhoid or small-pox.

They know society's need; they know the remedy; they have a magnetic power of guidance born of medieval superstition; they are at fault if they do not use this power to the good of all mankind by educating the public and dispelling the woful ignorance of simple truths that renders preventable diseases so destructive.

The State should hold some one person responsible for its vital statistics.* That person should be a statistical expert whose attention would be confined to statistical duties. He should not be expected to serve on any boards whatever. There is work sufficient to occupy the entire attention of such an expert and several clerks.

*Such is the system in Massachusetts, Connecticut, New York, New Hampshire.

Over 85,000 deaths are to be classified annually by locality-causes, age and sex. About 50,000 cases of infectious diseases are likewise to be classified. Then there are 100,000 births and thousands of marriages, besides the innumerable facts connected with the vital history of 6,000,000 people, extending over 40,000 square miles of territory.

At present it is true that one person is held responsible. The secretary of the State Board of Health is practically the State statistician. Aside from the fact that he has not sufficient assistance in his office and through the State, the double relation is impracticable. As executive his duty is to apply statistics to conditions in every part of the State. It is not in the power of one man to execute laws for 6,000,000 people and at the same time personally to oversee the registration of all the work done by himself, the thousand boards of health which the law contemplates, and the various other departments with quasi-sanitary powers. His connection with the clerical work of the statistician should be confined to the results of the latter's work.

Yet it is quite important that the position of the superintendent of vital statistics be subordinate to the executive health officers. To make them co-ordinate is certain to cause friction and waste of energy. The unfortunate result of the absence of concentration of responsibility is found in many Scotch and Irish cities where the sanitary inspector and the medical officers are co-ordinate. The two departments are as jealous as diplomats at state functions. Too much time is consumed in determining the official etiquette of any particular emergency, so that too little attention is paid to the good of the community whose condition health officers are pledged to better. Excellent as are the achievements of the Massachusetts health authorities, there can be no doubt that the co-ordination of the statistician and executive has proved disadvantageous to health administration.

It is, however, of the utmost importance that the statistician be independent in the choice of methods. The State Board of Health should not interfere with the devices which the expert may adopt to facilitate and popularize the various facts which the health officers may authorize him to collect. There is no more important phase of health administration than the introduction of various economies in the form of blanks and graphic tables. In visiting the large cities of Europe and United States one is struck with the inequality of achievement in the face of equality of powers. The secret is in the statistical machinery. At Brighton, Glasgow or in Liverpool every fact is classified immediately. Every inspector is responsible for a perfect statistical record of his work. So in this country,

wherever importance is attached to time saving devices for the collector of vital statistics, an aggressive administration is found.*

It is indeed an open question whether the State Board chose wisely in 1885, when it decided to administer law rather than to collect and disseminate vital statistics. Had the attention of the secretary been confined to this latter function it is probable that twice as many localities would now be represented in the annual returns. Time and attention would have improved the mechanical and clerical devices for recording facts. These would have encouraged prompt returns. Yankee ingenuity applauds comprehensive ingenious blanks; we like to fill them out. We like to watch tables in process of construction. In passing through our State one is surprised at the absence of up-to-date book-keeping of health records. Yet it is quite apparent that much more complete records exist where printed forms are kept to be filled in than where the recorder must write in his own hand the entire report. An illustration of this is furnished by the health officer of Lewisburg. He has made himself a little chart, where each death is recorded as it occurs. At the end of the year the record for twelve months is seen at a glance. If the State Board would place such a chart in the hands of every officer it is certain that more complete and more punctual death returns would be obtained.

But complete vital statistics must have a broader basis than the watchfulness and tact and expertness of a state statistician. It is indispensable that every death, every burial, every birth and every case of infectious disease be registered. For the purposes of administration, of health law, it is essential that registration be immediate. For purposes of a general health policy it is necessary that every township, every hamlet, borough and city, record from day to day its life history. Our vital statistics will never be complete until we can produce for each district and sub-district of the State, as well as for the State, as a whole a Life-Table. "A Life-Table may be defined as a scientific instrument designed for accurately measuring the forces of life and death prevailing, whether among a whole nation or in small towns * * * and only by the use of Life-Tables can there be made exact comparisons between nations, or between the separate communities which constitute nations as regards their vitality."†

If the State wishes this information it is obvious that every township, corporate town and city have its local statistician in correspondence with the State superintendent of vital statistics. We have seen that only 152 towns have officers who discharge even in part the function of statistician. Outside of towns is that large per-

*Minnesota, Michigan, Iowa, Massachusetts, Connecticut, New York, et al.

†T. E. Hayward, F. R. C. S., On Life-Tables, their Construction and Practical Application, 1899.

centage of the population who live under township government. These keep no records whatever. Even deaths are not recorded nor are certificates of death required for burial.

The remedy is obviously to be sought in a change in administrative machinery in every district in the State. The first step should be the establishment of health authorities in every township and town in the State, to whom the State expert could write for information. A second step and most essential is the establishment of statistical experts for each county. Thirdly, the State should draw into its service either by compulsion or compensation every physician, midwife, clergyman, magistrate or undertaker who may officiate at births, marriages, deaths, burials or attend upon infectious cases. Lastly, the State Board should be given appropriations sufficient to execute the existing laws where local authorities are incompetent. If this Board could authorize a census in every town which sends in defective statistics and charge the bill to that town, self interest would quickly assert itself by the appointment of a local officer.

It has been suggested that the present board organization is not adequate for the needs of townships and counties. While it is indispensable that every township have its health authority and its statistician, it would be a great step forward if we could institute county officers and township unions. The administrative unit must be made larger and consequently the statistical unit must be increased. Experience has demonstrated that no interest will be taken in vital statistics where there is no executive to make use of them. So long as our rural sections have an administrative health authority which does not and will not work, it will be almost impossible to get adequate statistical returns. Nevertheless the appointment of a person in every township and town to whom notices are to be sent would prove a great step in advance. With a growing sense of social responsibility on the part of the medical profession we should expect even from such a defective organization valuable contributions to our knowledge of the sanitary condition of the State.

With a statistician in each county and an expert at the capital, and with statistics for every township and borough of the State, there can be no doubt that sanitary administration will be stimulated and perfected. Emerson said all things are beautiful if light be thrown on them. This is true of all sciences. When sanitary science brings its facts vividly and graphically to the attention of the farmers and merchants, teachers and preachers, children and parents statistics will assume their proper relations and vital statistics will be read like daily weather bulletins.

VI.

PRACTICAL RESULTS OF CENTRAL CONTROL.

I. Earliest Activities and Lessons.

In response to the letters sent out by the secretary, complaints came from every section of the State, requesting the advice or assistance of the central authority. It became impossible for the secretary to make personal inspections of all nuisances, and within three months a beginning was made of the system of County Medical inspectorships, which now number over sixty. Office work also accumulated and an assistant was engaged.

The committees were meantime busy studying the needs of the State. By the second meeting, held in November, 1885, this study had determined the principal defects of the laws and methods for the collection of facts and enforcement of sanitary provisions. Three months of intensive study had revealed more than years of casual observation. Those first studies are the best we have ever had. A detailed scientific presentation of the condition of the Schuylkill river demonstrated the imperative need of regular patrol. It was also shown that machinery did not exist in rural districts and smaller boroughs through which the State authority could execute the laws and collect statistical data.

While boroughs possessed authority to abate nuisances and control infection, both by implication and by special grant, they did not organize administrative boards. On the contrary they seemed to feel that the appointment of the State Board relieved them of all responsibility. They would take the trouble when aggravated conditions arose to ask the central board to do just what the State law contemplated that the local authority itself should do. Fifteen years of experience have revealed nothing which the board did not clearly foresee after the first few months. The latest recommendation of the secretary in favor of compulsory appointment of local executive and registration officers is but the fifteenth reiteration of the conclusions reached during the first three months.

The Board of Health came before the Legislature in 1887 with every expectation of thorough-going reform legislation. The Assembly which created the Board had by implication pledged itself to

enact such measures as might be found upon investigation to be necessary. Bills were prepared providing for county health boards, for registration of vital statistics, for the extension of the provisions of 1874 to cities as reclassified, for prohibiting river pollution, and guaranteeing the purity of milk. The House passed the bill providing for county boards, but the Senate rejected it. The Senate accepted the stringent pure milk law but the House rejected it. Other matters crowded out the river and registration bills, while the appropriations were not increased to make possible the execution of the laws entrusted to the central authority.

That session was a disillusionment to the committees and to the secretary. For a year and a half all had labored in confident expectation that the Assembly would fulfill its pledge and enact the laws necessary to make the act of 1885 operative. It must be said in extenuation of the Legislature's inertia that its omissions were doubtless due to the fact that the need of sanitation in rural districts and of vital statistics was not sufficiently impressed upon their minds. There was no organized interest and no responsible legislative committee whose duty it was to enlighten them. Other matters properly supported by lobbies and interested committees very naturally took precedence.

The effect upon the board's enthusiasm and indirectly upon its efficiency cannot be definitely estimated. It is but natural that committees should hesitate to continue liberal donations of time and professional service after it appeared that reports and recommendations would be received as mere scientific treatises or sanitary vagaries. The board could not possibly do the work of local board in every borough and township in the State, nor could it by research work purify the Schuylkill. It is probable that the enthusiasm and activity of the board would have continued and possibly increased had the Legislature given it more work to do and more means for doing it.

But the indifference of the Legislature combined with the accumulation of executive duties to discourage the voluntary members of the board. The inducement to committee activity having been taken away, the board was shorn of essential functions and its duties were delegated to the secretary. It was impossible to take time during board meetings for more than a brief outline of the secretary's work. The board could do no more than listen with interest, and then pass formal motions of approval, confirmation or appropriate recommendation. Likewise the details of committee work came shortly to be shifted to the secretary. There was not time during sessions to go over the details of committee plans, while the members when not in session could not afford to neglect private interests. Hence the committees would report progress, until the

secretary formulated conclusions either in official reports or public addresses.

A case in point is the work of the first committee on legislation, whose chief duty at the outset was to propose a plan for rural health administration. In its first report, instead of a masterly solution of the administrative problem, we find a list of nine questions for the consideration of the entire board. The latter have never found time to answer those questions. The two changes which have been introduced, the compulsory establishment of health boards in boroughs, and the permissive organization of school directors as school boards, have been compromises or rather evasions of plans presented by the *de facto* board, the secretary.

The relation of the executive officer to the deliberative board, his superior, may be seen by reference to the action of the central authority during two serious emergencies. The Johnstown flood put our sanitary machinery to the test. Tons of disinfecting material were distributed, hundreds of buildings torn down, mountains of debris cleared away, and hundreds of men employed by order of the secretary. The other members of the board were represented, and Dr. Groff was especially active. But the appointed inspectors and physicians from other states were likewise active. From the official report of the sanitary relief given after the great disaster, there is no evidence that the secretary was not even in emergency the *de facto* board. The secretary would wire a suggestion and ask for confirmation. With no desire to disparage the value of the advice given by other members of the board, it must be apparent to all, that such a crisis revealed only the inevitable result of board organizations—one man must plan and act.

The last epidemic of small-pox in 1899, called for active interference by the central board. It was necessary to erect temporary hospitals and to institute inspections. Over 1,500 cases of small-pox are believed to have occurred. There is no record of any special activity of the board either stimulating or strengthening the secretary. In fact no one can doubt but the work would have been done just the same if every member of the board had been out of the State.

"It is one of the least disputed conclusions of human experience that an army controlled by a group of leaders has no chance against an equal army controlled by a single leader."*

These two emergencies showed, however, two other important facts with reference to central control. Not only is central authority exercised by one man, but, he finds it necessary to have local executive officers directly responsible to him. The secretary did not ask for committees of inspectors to control the small-pox epidemic, or to prevent epidemic after the Johnstown disaster. Further-

*Jenks, *Law and Politics*, p. 75.

For instance in 1899, a law was passed permitting school directors in townships to organize as boards of health. The law admitted that the township at present is without sanitary protection, and therefore menaces the borough and the city. An efficient administration is desired. Yet the administration provided is not a solution of the difficulty. Permissive legislation means halfhearted administration in a very few localities. Finally, experience should have convinced the Assembly that school directors, being elected for other ends, cannot and will not give attention to health matters until after some emergency arises.

However, there has been a great deal of valuable sanitary legislation which for the most part has been at the instigation of the State Board. Among the most important radical measures are the following: State appropriations are to be withheld until school directors testify that school property is in a sanitary condition.

Vaccination is made a qualification for admission to schools, public or private. Boards of health must be organized in every incorporated town, while school directors in townships may organize as boards of health in their respective districts.

Where sewers are needed for general health or public welfare, the burgess and council may take the initiative and raise by taxation, subject only to the constitutional limit on debts. Councils may compel property owners to connect with sewers, if within fifty feet of it. Sewage may be carried to points outside boroughs.

As executive the Board has received complaints and ordered inspections as follows:

Year.	Complaints.	Inspections.	Year.	Complaints.	Inspectors.
1885, .....	.....	3	1892,	103	38
1886,	26	20	1893,	21	20
1887,	21	19	1894,	59	62
1888,	22	26	1895,	111	51
1889,	19	36	1896,	85	43
1890,	43	34	1897,	112	63
1891,	74	29	1898,	102	31

Taking the year 1898, as a representative year, we see that the Secretary of the board wrote 3,000 letters, in addition to thousands of circulars, attended a half dozen conventions, ordered thirty-one inspections, and by correspondence, abated 102 nuisances. Of these nuisances not one would have been called to the attention of the

more our communities in time of danger have no aversion to central control. In fact they are very glad to receive protection from the State especially when the State pays for the removal of the danger.

Mr. Bryce says: "Given an adequate occasion, executive authority in America can better venture to take strong measures, than is the case in England. When there is a failure to enforce the law the fault lies at the door not of the people, but of timid or time serving officials who fear to offend some interested section of the voters."* In Pennsylvania, we know that executive authority is permitted to take very strong measures in emergencies. The great fault is that we are in the habit of reserving our calls for assistance and our applications for relief for emergencies, instead of preventing the emergency by precautionary measures.

The work of the board, except in the cases of emergency, has been largely office work. Its functions are more largely educational and advisory than executive. Thousands of circulars, forms and blanks are sent about the State, the annual report is circulated and the secretary visits associations, both sanitary and educational. Requests for information from local boards are answered, and along with the interpretation of the law, goes an exhortation to administer it rigidly. The executive functions are at present chiefly exercised in relation to nuisance complaints. If the law and the facts are simple and certain, the central authority gives its directions by letter without inspection. If the situation is complicated or the offender obstreperous, the secretary orders an inspection by one of the sixty-three county inspectors, or he may even go in person. Prosecutions are rarely necessary. It is taken for granted that the decision of the State Board is final, for it is recognized that it is executing State not local law, and its definition of nuisance supersedes that of any local council. Unfortunately, the prosecutions are not frequent enough in cases of river pollution for reasons which lie chiefly at the door of the Legislature.

The last step in the year's routine is the annual report to the Governor with its recommendations for legislation. A vast amount of legislation has resulted from these recommendations during fifteen years. But, unfortunately, the Legislature has temporized. Instead of a thorough-going reorganization or some adequate law, a weak compromise is enacted. There seems to be no principle involved, for a very stringent law will be put in the hands of notoriously inefficient administrators or perhaps a new machine will be erected. By a strange coincidence the stringent law or the new machine is sure to be handicapped from the outset by some qualification or some inherent inconsistency. In no case has the Legislature made appropriations which would make effective either the laws or the machinery to enforce them.

*American Commonwealth, II, 604.

State Board, if local administration were up to even an average standard. They were distributed as follows:

Well and river pollutions,	17
Bad drainage,	42
Offensive trades,	24
Slaughter houses,	12
Pigpens,	10
Bone boiling,	2
Imperfect scavenging,	21
Miscellaneous,	5
	<hr/>
	109
Overlapping,	7
	<hr/>
Total abated,	102
	<hr/> <hr/>

Of these 102 complaints, seventy-seven came from towns having no board of health, twelve came from towns of over 10,000 inhabitants, and six from towns whose boards report no nuisances abated during the year.

It is not to be inferred that the central authority should not have abated those nuisances. It must be asserted, however, that that authority was designed for higher purposes than local scavenging. So long as local administration is deficient in the performance of these simplest duties, it is fortunate that we have a central board to whom the injured parties or localities throughout the State can appeal for redress and protection. But the central control anticipated in the law of 1885 was intended to work upon and through local authorities to effect permanent remedies, not to busy itself with individual nuisances.

The activities of the board as at first outlined were expressed in broad terms looking toward some general sanitary policy. When the address was penned no one dreamed that our newly constituted sanitary authority should be occupied with piggeries, slaughter houses and filthy families. But for fifteen years, we have heard no more of State inspection of all public institutions, schools, prisons, asylums, poor houses and resorts. We have abandoned the consideration of wonderful opportunities "for sanitary engineering on a large scale." Sanitary investigations into specific Pennsylvania conditions are in abeyance. As at present acting, our State administration of the elaborate sanitary code has degenerated into mere nuisance abatement. Central control means there local irresponsibility. Our board is discharging the same executive functions as the town constable of the time of Queen Elizabeth.

	1885.	1900.
Staff of State Board of Health:		
Secretary,	1	1
Clerks,		2
Medical inspectors,		63
Engineer inspectors,		2
Chemists,		2
Bacteriologists,		5
Appropriation,	\$5,000	\$6,000
Plus emergency fund,		50,000
Boards of health,	11	600
Boards reporting,	4	250
Towns supplied with water,	95	445
Hospitals receiving State aid,	12	75
State aid given hospitals,	\$261,000	\$1,731,146
Written communications received,	1,063	3,000
Written communications sent out,	915	2,800
		('98)
Complaints received,	10	102
Communities known to have typhoid,	3	176

The defects of central control are due to two causes. First the lack of local sanitary authorities; second, the lack of appropriations. The law commands every borough to appoint a board of health. Yet so far as the State Board is informed, there were in 1898, only 231 out of 800 boroughs which had boards of health. If boards exist in these towns they are inoperative so long as they fail to report to the State Board. If these towns are without boards, they may be mandamusd and compelled to organize them.

The following towns with populations of 2,500 or more made no report to the State Board of Health. Some few are known to have had boards of health but the greater part are without any sanitary organization:

Ashland,	7,316	Greenville,	3,674
Athens,	3,274	Hanover,	2,746
Avoca,	3,031	Hellertown,	2,975
Bennet,	3,809	Hollidaysburg,	2,975
Berwick,	2,701	Homestead,	7,911
Braddock,	8,561	Honesdale,	2,816
Carbondale,	10,833	Huntingdon,	5,729
Centralia,	2,761	Jermyn,	2,650
Chartiers,	2,983	Kane,	2,944
Coatesville,	3,680	Mauch chunk,	4,101
Columbia,	10,599	Middletown,	5,080
Corry,	5,677	Milton,	5,317
Dickson,	3,111	Monongahela,	4,096
East Mauch Chunk,	2,772	Morrellville,	2,827
E. McKeesport,	2,772	Mount Pleasant,	3,652
Easton,	14,481	Nanticoke,	10,044
Etna,	3,767	Newberry,	2,500
Franklin,	6,221	Phillipsburg,	3,245
Gilberton,	3,697	Pottsville,	14,117
Girardville,	3,584	Punxsutawney,	2,792
Schuylkill Haven,	3,088	Susquehanna Depot,	3,872
South Chester,	7,076	Uniontown,	6,353
South Easton,	5,616	West Pittston,	3,906
South Williamsport,	2,900	Warren,	4,332
Sugar Notch,	2,586	Wilkes-Barre,	37,718
Sunbury,	5,930		

Towns with populations between 1,000-2,500, making no returns of the vital statistics. Many more towns belong to this list but we may not take account of the increase of population since the census of 1890.

Annville,	1,283	Knoxville,	1,723
Apollo,	2,156	Lattimer,	1,051
Ardmore,	2,205	Leechburg,	1,921
Avenue,	1,453	Lykens,	2,450
Beaver,	1,552	McDonald,	1,698
Bechtelville,	1,143	McKees Rocks,	1,687
Bellwood,	1,146	Mansfield (Allegheny),	2,352
Bellevue,	1,418	Mansfield (Tioga),	1,762
Beltzhoover,	2,009	Marietta,	2,402
Bridgeport (Fayette),	1,030	Marysville,	1,115
Bridgeport (Westmoreland),	1,001	Maysville,	1,695
Bridgewater,	1,177	Mercer,	2,138
Brisbin,	1,508	Meyersdale,	1,847
Brownsville,	1,417	Millersville,	1,241
California,	1,024	Miners Mills,	2,075
Canonsburg,	2,113	Montoursville,	1,278
Canton,	1,393	Montrose,	1,735
Clarendon,	1,297	Morrisville,	1,203
Clayville,	1,402	Morton,	1,278
Clearfield,	2,248	Mount Holly Springs,	1,190
Clifton Heights,	1,820	Mount Oliver,	1,927
Coaldale,	1,849	Muncy,	1,295
Copeland,	1,349	Myerstown,	1,880
Coudersport,	1,530	New Bethlehem,	1,026
Delano,	1,362	New Holland,	1,060
Derry,	1,968	New Hope,	1,142
Dravosburg,	1,089	Newport,	1,417
Dunbar,	1,381	Nesquehoming,	1,655
Duncansville,	1,277	Osceola Mills,	1,730
East Conemaugh,	1,158	Palo Alto,	1,424
Ebensburg,	1,202	Parker,	1,317
Eckley,	1,241	Parsons,	2,412
Edinboro,	1,107	Pen Argyl,	2,108
Elizabeth,	1,804	Port Perry,	1,031
Elizabethtown,	1,218	Reynoldton,	1,379
Elkland,	1,006	St. Mary,	1,745
Emlenton,	1,126	Saltsburg,	1,088
Emporium,	2,147	Sheffield,	1,295
Everett,	1,679	Shick-shinny,	1,448
Fairchance,	1,092	Shippensburg,	2,188
Ford City,	1,253	Smethport,	1,150
Forty Fort,	1,031	Somerset,	1,713
Gallitzin,	2,392	South Fork,	1,295
Glenlyon,	2,255	South Waverly,	1,082
Gordon,	1,191	Spring,	1,797
Great Bend,	1,002	Stoneboro,	1,394
Greencastle,	1,525	Tower,	2,053
Hallstead,	1,167	Tunkhannock,	1,253
Hastings,	1,070	Union,	2,261
Homerstown,	1,014	West Fairview,	1,137
Hughesville,	1,358	Westfield,	1,128
Hughestown,	1,454	West Indiana,	1,624
Hummelstown,	1,486	West Newcastle,	1,761
Hyndman,	1,036	White Haven,	1,634
Indiana,	1,963	Wilcox,	1,037
Irwin,	2,428	Williamstown,	2,324
Jersey Shore,	1,853	Winton,	1,797
Kendall,	1,937	Womelsdorf,	1,141
Kingston,	2,381	Wyoming,	1,794

In every one of the three hundred boroughs known not to have boards of health mandamuses may issue to compel their formation. Yet the central board cannot conduct prosecutions against boroughs without appropriations.

The need of a strong central board with appropriations to execute its powers is quite as obvious if we study the conditions in towns which send reports to the State Board. Our health laws are uniform and presume equal vigilance in all parts of the State. The following tables, if the statistics are accurate, prove that certain towns are doing less than others of the same size to protect the State from local evils and to protect themselves from foreign infection. A strong State Board with ample means could compel delinquent communities to discharge their sanitary functions, or could help specially unfavored communities to cope with exceptional local difficulties. The towns are grouped according to population. The tables show the death rate, number of nuisances reported in 1898, number of board meetings held, the salaries of health officers and secretaries and whether the vaccination law is enforced.

Of the towns reporting in 1898, the vaccination law is said not to be enforced in twelve out of thirty-four cities of 10,000 or over:

In six out of seventeen towns, 7,000-10,000.

In fifteen out of twenty-seven towns, 4,000-7,000.

In sixteen out of twenty-three towns, 3,000-4,000.

In seventeen out of thirty-seven towns 2,000-3,000.

In twenty-three out of forty-nine towns, 1,000-2,000.

In twenty out of thirty-four towns, 500 1,000.

In seven out of ten towns, 175-500.

Total 116 out of 231 towns reported.

Less Than 500.

Town.	Population.	Death rate.	Nuisances reported.	Meetings of board.	Salaries.		Vaccination not required.
					Health officer.	Secretary.	
Telford,	175	11.00	.....	.....	.....	.....	X
Clarksville,	200	.....	.....	6	\$10 00	.....	X
Hopbottom,	300	.....	.....	.....	.....	.....	.....
Shippenville,	300	6.33	1	3	F.	\$10 00	.....
Landingville,	316	24.00	.....	4	2 50	5 00	.....
Rutledge,	332	12.10	3	5	.....	25 00	X
Bendersville,	400	17.50	12	5	6 00	.....	X
Liberty,	400	2.50	.....	10	5 00	5 00	X
Point Marion,	400	12.50	4	2	.....	.....	X
Scalp Level,	400	10.00	2	.....	.....	.....	.....
Rock Ledge,	450	11.11	13	7	.....	.....	X
Delaware Water Gap,	467	.....	.....	.....	.....	.....	.....

500-1,000.

Town.	Population.	Death rate.	Nuisances reported.	Meetings of board.	Salaries.		Vaccination not enforced.
					Health officer.	Secretary.	
Dayton,	500	.....	5	2	\$0 25	\$10 00	X
Glenolden,	500	.....	.....	12	50 00	25 00	.....
La Porte,	500	10.00	.....	3	30 00	.....	.....
Polk,	500	.....	.....	6	.....	.....	X
Rockhill,	500	6.00	2	10	5 00	5 00	.....
So. Greensburg,	500	6.00	4	7	.....	.....	X
So. Renovo,	500	.....	2	1	.....	.....	X
Topton,	500	8.00	4	6	F.	5 00	X
Weissport,	500	8.00	3	12	.....	6 00	.....
Center Hall,	600	.....	.....	1	.....	.....	.....
Collingdale,	600	3.32	4	6	.....	.....	.....
Halifax,	600	10.00	.....	12	.....	10 00	X
Homer City,	609	20.00	6	12	25 00	15 00	.....
Kinzua,	600	16.66	.....	.....	.....	.....	X
Fredonia,	650	.....	1	2	.....	.....	X
Tioga,	650	.....	4	2	.....	25 00	X
Cokerville,	664	.....	3	6	.....	12 00	.....
Delta,	700	8.57	1	5	25 00	.....	.....
Jeddo,	700	7.10	.....	3	.....	.....	.....
Petersburg,	700	.....	6	3	.....	.....	X
Swarthmore,	700	11.11	3	8	25	50 00	X
Bath,	723	16.51	2	9	12 00	15 00	X
Avondale,	750	13.00	4	8	15 00	25 00	.....
Glenfield,	750	10.00	3	12	.....	.....	X
Centerville,	800	7.50	.....	6	5 00	.....	X
Jamestown,	800	.....	.....	2	.....	.....	.....
Linesville,	800	10.00	13	12	10 00	.....	X
New Wilmington,	800	.....	5	3	.....	.....	X
Portland,	800	15.00	10	6	.....	.....	X
Wind Gap,	800	8.75	3	12	.....	.....	X
York Haven,	800	.....	1	8	25 00	15 00	X
Emsworth,	900	5.55	9	12	60 00	25 00	.....
S. W. Greensburg,	900	7.50	10	3	.....	15 00	X
Yardley,	913	17.00	.....	.....	.....	.....	X

1,000-1,500.

City.	Population.	Death rate.	Nuisances reported.	Meetings of board.	Salaries.		Vaccination not required.
					Health officer.	Secretary.	
Montgomery,	1,000	15.00	10	6			X
Burgettstown,	1,000	15.00	8	8	F.	\$10 00	X
Colwyn,	1,000	14.00	5	8	\$20 00	20 00	X
Cressona,	1,000	20.00	6	6	35 00	35 00	X
East Brady,	1,000	8.46	29	4		25 00	
East Greensburg,	1,000	14.00	20	10	25 00	25 00	X
Edenburg,	1,000	6.00	17	6	12 00	12 00	X
Factoryville,	1,000	5.00	3	6	5 00	5 00	
Lewisville,	1,000						X
Mahaffey,	1,000	4.00		3			
Nescopeck,	1,000			1			X
Narberth,	1,000	5.00	2	4	25 00		X
Spring Grove,	1,000	18.00			20 00	10 00	
Tionesta,	1,000	8.00	7		20	10 00	
Aspinwall,	1,100	7.27	13	15	65 00	40 00	
Millerstown,	1,100						X
Auburn,	1,200	18.33	13	10	15 00	15 00	
Dallastown,	1,200			12	5 00		X
Newtown,	1,200	16.66	6	8	30 00	15 00	
Pine Grove,	1,200	8.33	3	3	25 00	25 00	
Roaring Spring,	1,200	20.00	34	12	25 00	25 00	
Tidioute,	1,200	10.00	2			25 00	
West Bridgewater,	1,200	13.00	4		60 00	25 00	
Orwigsburg,	1,200		2	12	35 00	25 00	
Ligonier,	1,300		25	12			
New Cumberland,	1,400	12.00	15				
Ridley Park,	1,300	10.00	6	6	100 00	50 00	
North Wales,	1,400	12.80	2	10	20	25 00	X
So. Washington,	1,400	8.66	8	6	C. P.		

1,500-2,000.

City.	Population.	Death rate.	Nuisances reported.	Meetings of board.	Salaries.		Vaccination not enforced.
					Health officer.	Secretary.	
East Bangor,	1,500	7.00	1	4	12 00	10 00	
McSherrystown,	1,500	12.00	7	11	36 00	20 00	X
Exeter,	1,500	51.00	58	8	120 00	60 00	X
Kutztown,	1,500		8	4	25	10 00	X
Marcus Hook,	1,500	20.70	11	4	F.	25 00	X
Mayfield,	1,500	22.66	35	12	50 00	50 00	
Newville,	1,500		7	4	20 00	30 00	X
Red Lion,	1,500	12	12	15	20	6 00	X
Selins Grove,	1,500	4	6	5			
Troy,	1,500	12.66	13	4	20 00	25 00	
Parkersburg,	1,514	16.00				10 00	
Kennett Square,	1,600		12	12	25 00	50 00	
Mifflinburg,	1,600		3		10 00		X
Brockwayville,	1,800	10.00	13	13	50 00	10 00	
Lititz,	1,800	8.88	2	5	20 00	35 00	X

1,500-2,000 B—Continued.

City.	Population.	Death rate.	Nuisances reported.	Meetings of board.	Salaries.		Vaccination not enforced.
					Health officer.	Secretary.	
Millersburg,	1,800	10.00	1	4	10 00	10 00	X
Monaca,	1,800	10.55	27	14	35 00	25 00	X
New Haven,	1,800	8.88	47	6	.....	25 00	.....
West Conshohocken,	1,800	.....	.....	10	.....	.....	X
Catawissa,	1,809	.....	2	7	.....	25 00	.....

2,000-3,000.

City.	Population.	Death rate.	Nuisances reported.	Meetings of board.	Salaries.		Vaccination not enforced.
					Health officer.	Secretary.	
Ambler,	2,000	11.50	5	4	\$50 00	.....	.....
Boyertown,	2,000	9.00	1	12	30 00	.....	.....
Freeport,	2,000	13.00	.....	10	.....	.....	.....
Hawley,	2,000	.....	7	1	.....	.....	X
Houtzdale,	2,000	4.50	12	4	20 00	\$25 00	.....
Nazareth,	2,000	10.00	2	.....	50 00	25 00	X
Oakmont,	2,000	10.00	34	11	15 00	50 00	X
Pelasic,	2,000	9.00	1	13	20	25 00	.....
Port Allegheny,	2,000	2.50	12	12	.....	.....	X
Spring City,	2,000	10.00	.....	12	.....	25 00	.....
Turtle Creek,	2,000	9.00	23	10	35 00	.....	.....
Upland,	2,000	10.50	.....	3	25 00	25 00	X
Verona,	2,000	9.60	2	3	.....	120 00	X
West Hazleton,	2,000	17.00	12	13	60 00	60 00	X
Manheim,	2,070	.....	1	6	.....	15 00	.....
Downingtown,	2,094	12.41	14	10	40 00	30 00	X
Jenkintown,	2,109	15.20	3	13	100 00	50 00	X
Watsontown,	2,150	.....	2	6	10 00	.....	X
Curwensville,	2,200	11.00	15	6	20	30 00	.....
Tremont,	2,200	14.00	2	10	35 00	30 00	.....
Oxford,	2,300	.....	.....	.....	.....	.....	.....
Bedford,	2,400	16.25	50	19	25 00	25 00	.....
Wrightsville,	2,400	12.00	40	12	45 00	25 00	X
Avalon,	2,500	16.40	41	8	20	100 00	.....
Clarion,	2,500	6.40	5	6	F.	10 00	X
Grove City,	2,500	3.20	8	7	F.	15 00	.....
North East,	2,500	11.11	1	1	F.	.....	X
Royersford,	2,500	.....	.....	11	.....	40 00	.....
Throop,	2,500	17.00	20	11	50 00	50 00	X
Frackville,	2,530	.....	2	9	50 00	50 00	.....
Bridgeport,	2,700	19.26	12	12	120 00	.....	X
Ephrata,	2,700	11.11	16	16	35 00	50 00	.....
Port Carbon,	2,700	11.50	8	3	60 00	50 00	.....
Blossburg,	2,800	15.00	5	11	25 00	25 00	.....
Brookville,	2,800	9 00	60	8	F.	50 00	X
Esplen,	2,800	10.00	.....	9	.....	50 00	X
Weatherly,	2,961	.....	4	6	5 00	20 00	.....

3,000-4,000.

Town.	Population.	Death rate.	Nuisances reported.	Meetings of board.	Salaries.		Vaccination not required.
					Health officer.	Secretary.	
Austin,	3,000		31	20			
Birdsboro,	3,000	13.33		14	50 00	30 00	X
Darby,	3,000	8.25	10	9	50 00	25 00	X
Doylestown,	3,000	15.00	18	14	100 00	75 00	
Patton,	3,000	14.00	5	12		12 00	
Quakertown,	3,000	15.33	2	12	15 00	25 00	X
Sharpsville,	3,000	10.00	21	2	60 00	15 00	X
Waynesburg,	3,000	12.33	25	4	180 00	60 00	X
West Newton,	3,000	8.66	25	10	60 00	60 00	
Lansdowne,	3,200	6.00	19	14	110 00		X
Lewisburg,	3,200	17.19	18	6	150 00	25 00	X
Media,	3,335	11.40		12	100 00	100 00	X
Elliot,	3,500	12.86	17	20	60 00	40 00	
Kittanning,	3,500	17.00	79	23	60 00	30 00	X
Lewistown,	3,500	9.00			120 00		X
Sewickly,	3,500	12.00	30	14	180 00	75 00	X
Stroudsburg,	3,500		25	12		5 00	X
Summit Hill,	3,500			12	10 00	7 00	X
Wellsboro,	3,500		10	5	50 00	25 00	
Minersville,	3,504		76	12	300 00	50 00	
Catasauqua,	3,734	16.19	170	15	120 00	75 00	X
Bellefonte,	3,800		30	6	F.	75 00	X
Gettysburg,	3,800	17.00	17	10	60 00	60 00	X

4,000-7,000.

Town.	Population.	Death rate.	Nuisances reported.	Meetings of board.	Salaries.		Vaccination not enforced.
					Health officer.	Secretary.	
Archbald,	6,000	15.00	4	8	\$50 00	\$50 00	
Sharpsburg,	6,000	12.00	165	10	25 00	25 00	X
Conshohocken,	6,500	12.70			100 00	100 00	X
Freeland,	6,500		150		120 00	40 00	
West Pittston,	6,700	23.28	95	14	240 00	120 00	X
Connellsville,	6,800	15.30	87	9	25 00	10 00	X
Lansford,	5,000	13.80	37	16	120 00	72 00	X
Lehighton,	5,000	9.00	2	9	10 00	60 00	X
Renovo,	5,000	8.00	10	10	100 00	50 00	X
Rochester,	5,000		160	10	25 00	25 00	X
Taylor,	5,000						
Waynesboro,	5,500		57	5		75 00	X
Ashley,	4,000	16.50	113		C. P.	75 00	
Blakely,	4,000	10.75	5	12	100 00	30 00	X
Forest City,	4,000	16.25			F.	50 00	
Johnsonburg,	4,000	5.75	147	13	75 00	60 00	
Latrobe,	4,000	13.75	6		60 00	120 00	
Reynoldsville,	4,000		6	1		25 00	X
Scottsdale,	4,000	10.00	94	11	C. P.	120 00	

4,000-7,000—Continued.

Town.	Population.	Death rate.	Nuisances reported.	Meetings of board.	Salaries.		Vaccination not enforced.
					Health officer.	Secretary.	
Slatington,	4,000	15.25	6	12	120 00	40 00	X
Susquehanna,	4,000	18.50	22	12	50 00	35 00	.....
West Bethlehem,	4,000	13.00	21	11	50 00	50 00	.....
Wilmerding,	4,000	3.00	23	11	300 00	50 00	X
Blairsville,	4,500	10.00	20	12	48 00	72 00	X
Ridgway,	4,500	7.00	6	6	.....	25 00	.....
Towanda,	4,500	8.20	34	7	25 00	75 00	.....
Mechanicsburg,	4,500	15.11	75	13	75 00	50 00	X
Bangor,	4,800	10.00	7	10	50 00	50 00	.....

7,000-8,000-9,000-10,000.

Town.	Population.	Death rate.	Nuisances reported.	Meetings of board.	Health officer's salary.	Secretary's salary.	Vaccination not enforced.
Dubois,	8,000	8.88	433	11	100 00	100 00	X
Lock Haven,	9,000	7.66	68	5	120 00	50 00	X
Titusville,	9,000	9.40	48	6	.....	200 00	.....
Washington,	9,000	12.22	457	15	300 00	180 00	.....
Steelton,	9,250	.....	53	10	300 00	120 00	.....
Plymouth,	9,344	.....	192	16	480 00	120 00	.....
Bethlehem,	8,000	12.00	57	11	20 00	50 00	X
Bloomsburg,	8,000	.....	98	8	150 00	60 00	X
*Phoenixville,	8,514	18.44	.....	.....	50 00	60 00	.....
Bristol,	7,000	17.30	.....	10	60 00	60 00	X
Jeannette,	7,000	11.86	30	3	100 00	75 00	.....
New Brighton,	7,000	11.71	117	12	315 00	150 00	.....
St. Clair,	7,000	19.00	75	12	20 00	5 00	.....
Tamaqua,	7,000	13.57	16	12	120 00	120 00	X
Tyrone,	7,000	.....	.....	.....	120 00	120 00	.....
Millvale,	7,300	13.30	43	7	75 00	60 00	.....
Danville,	7,998	.....	39	6	100 00	50 00	.....

*Milk inspector, \$75.

Cities over 10,000.

City.	Population.	Death rate.	Nuisances reported.	Meetings of board.	Health officer's salary.	Secretary's annual salary.	Vaccination not enforced.	Do not enforce vaccination.
Sharon,	10,000	.....	67	12	*	\$50 00	.....	X
West Chester,	10,000	15.2	23	13	.....	.....	.....	X
Carlisle,	11,135	15.35	164	.....	\$300 00	.....	34	.....
Beaver falls,	12,000	10.66	230	5	600 00	.....	.....	X
Butler,	12,000	11.59	269	28	25 00	12 50	.....	.....
Chambersburg,	12,060	16.30	.....	9	100 00	75 00	.....	X
Meadville,	12,000	7.75	187	23	300 00	187 50	.....	.....
South Bethlehem,	12,000	18.66	35	14	420 00	120 00	.....	X
Mount Carmel,	13,000	21.08	51	6	240 00	180 00	.....	.....
Dunmore,	15,000	17.00	68	6	180 00	75 00	.....	X
Mahanoy City,	15,000	14.27	.....	12	300 00	150 00	.....	.....
Pittston,	15,000	11.80	92	9	600 00	150 00	.....	X
Shamokin,	15,000	.....	30	.....	180 00	75 00	.....	.....
Pottstown,	16,000	13.12	201	24	540 00	100 00	.....	.....
Oil City,	18,000	7	934	4	600 00	120 00	216 00	X
Bradford,	19,000	8.30	483	14	840 00	300 00	.....	.....
Lebanon,	20,000	15.00	360	22	300 00	300 00	.....	.....
Shenandoah,	20,000	17.70	.....	.....	480 00	180 00	.....	.....
York,	25,615	18.42	.....	12	360 00	120 00	.....	X
New Castle,	30,000	11.63	.....	.....	600 00	.....	.....	X
Johnstown,	32,000	14.31	568	13	720 00	200 00	.....	.....
Allentown,	35,000	14.26	.....	12	500 00	C. C.	.....	.....
Chester,	35,000	12.06	532	31	1,020 00	.....	.....	.....
McKeesport,	35,000	15.08	557	6	900 00	900 00	.....	.....
Williamsport,	35,000	7.50	68	14	900 00	120 00	.....	.....
Lancaster,	42,000	13.44	498	13	720 00	900 00	.....	.....
Altoona,	35,000	12.51	45	45	55 00	35 00	.....	.....
Harrisburg,	50,000	13.10	8,920	4	.....	.....	.....	X
Erie,	58,000	9.50	1,456	15	100 00	50 00	.....	.....
Reading,	76,000	14.00	3,100	20	740 00	400 00	.....	X
Scranton,	105,000	15.20	.....	20	800 00	600 00	.....	.....
Allegheny,	135,000	15.66	4,761	Bureau.	1,800 00	.....	.....	.....
Pittsburg, .....	.....	.....	2	.....	2,500 00	.....	.....	.....
Philadelphia, .....	.....	.....	.....	.....	4,000 00	.....	.....	.....

*25 cents per hour.

In light of the fact that small-pox is at present epidemic throughout certain counties of the State the State Board would be justified in carrying out its threat of 1899, to step into communities and vaccinate school children. Yet the State authority cannot enforce the vaccination law by writing letters from Philadelphia. It cannot go out of Philadelphia or order inspectors to do the work because there is no appropriation for paying the expenses.

Rivers all over the State are open sewers. Typhoid is far more prevalent than the ever-present diseases, diphtheria and scarlet fever. The State Board may prosecute every town and every corporation in the State and the courts following the decision of Judge Thayer will enjoin cities and factories from running impure effluents into streams. The power is there, but there must be appropriations for inspections, testimony and prosecution.

The State has chemists and bacteriologists for the free analysis of water and foods. Violations of law may be severely punished. The State Board does not make analyses because it cannot pay for samples. Again schools may not receive State appropriations unless the sanitary conditions are fit. A county convention was recently held in a school house where the privy was erected in violation of the rules of the State Board. There was no provision for ventilation and during a discussion on school hygiene, the teachers present had each just seventy cubic feet of air during a three hours' session. The State Board is responsible for the unsanitary condition of that school, yet is powerless to act, because it cannot pay inspectors.

Likewise hospitals and prisons and poor houses are in unsanitary conditions. The Board of Charities may notice these conditions and be sufficiently impressed to notify the State Board. That board has no funds for discharging the duties imposed upon it in the interest of inmates of public institutions.

Just why the State health authority should have received such inadequate appropriations with which to execute such important laws is difficult to understand. We all know that the Legislature has been actuated by no deep seated motives of economy. A comparison of the appropriations and salary placed at the disposal of the executive of the State health authority will demonstrate one of two things. Either the State Board of Health has not urged the needs of its department in the proper parliamentary diplomatic way, or else the representatives of the people do not appreciate the vast importance of efficient sanitary administration.

The State pays eleven times as much for its mine inspection as for its general health administration. It is true that not one cent should be taken from the expense in the interests of those who risk life and health to exploit our coal and iron beds. But is there not a lack of proportion which ascribes so little importance to the health and safety of the wives and children of these miners? Even the miner draws his water and food from without the mine, he sleeps above ground and outside the jurisdiction of the mine inspectors. Over 6,000 die annually from preventable diseases. Over 2,000 die from typhoid for which the State is directly responsible. The calamity is none the less appalling because these thousands do not suffer death in one month or at one particular place.

The State spends nearly \$40,000 in factory inspection, a most necessary and economical outlay. Yet only a small proportion of the people of the State work in factories and these spend less than half their time in factories. The twenty inspectors have sufficient to occupy their time, and have done the State great service. Yet their point of view is rather that of the machinist than the sanitarian. The iron industry is not subject to such sanitary abuses as are the

textile industries. In all cases, however, the greatest danger which the hands suffer is when they leave the factory and go into their narrow, badly drained and overcrowded quarters. Who would not rather work all day in Carnegie's factories at Homestead than sleep over night in the miserable hovels within the enclosure? There are 6,000,000 of people in the State. Against typhoid, consumption, diphtheria, scarlet fever, etc., factory inspection and mining inspection offer little protection, if any.

The Live Stock Sanitary Board was given about \$35,000 in 1898, for the improvement of the vitality of live stock. This board has done and is doing invaluable service in exterminating tuberculosis and other transmissible diseases among cattle. To the extent that the board concerns itself with the health of milch cows it should be regarded as performing the work of a State sanitary authority. But there are 100 times as many human beings in Pennsylvania, who are expectorating the tubercular bacillus as there are cattle which will respond to the tuberculin test. There are only 70,000 cattle in the State. For the control of diseases in these, the State expends twice as much as for the protection of 6,000,000 people against typhoid and other transmissible diseases.

At the outside the 70,000 cows owned by Pennsylvania farmers are not worth more than \$3,500,000 and the income from them cannot exceed \$1,000,000. This is a mere bagatelle compared with the cost of typhoid which even outside of Pittsburg and Philadelphia costs not less than twice that amount, in addition to the value of the lives of 800 adults and the incidental losses involved in attendance. It is true that the typhoid losses do not fall exclusively upon the farmer, whereas he benefits most directly from veterinary protection. But it is none the less true that the farmer pays a great share of the typhoid bill, just as the city benefits largely, perhaps most largely from the improvement in the health of cattle. The difference in the attitude of the farmer may be accounted for by the fact that he regards the expenditure for live stock inspection as an investment, and the general expenditures for protection to his children as insurance.

The State quarantine service receives annually about \$52,750, or more than eight times as much as the State Board of Health. Aside from the fact that there is no reason why this branch of the service should be kept distinct, it must be apparent that there is a lack of proportion in the emphasis laid upon the two. The day has passed when the greatest danger to health comes from abroad. Quarantine is indispensable, but if given a choice between maintaining internal sanitation or maritime quarantine, no sanitarian in America would to-day choose the latter. We have at present an epidemic

of small-pox which rages in the western part of the State, but it did not come from the sea. During four years there have not been a hundred deaths from small-pox and nine from yellow fever, cholera, bubonic plague or other dread tropical diseases. Occasionally the United States service down the Delaware will discover a leper or something of the kind, but there is no need of expending \$50,000 a year for this unless the State supports this service by commensurate internal vigilance.

The Board of Health has protested again and again that its hands were tied and its activity hampered by lack of the sinews of administration.

Appropriations by Departments.

State Board of Health,	\$6,000 00
State Quarantine Service,	52,750 00
State Board of Charities,	5,600 00
State Factory Inspection,	39,500 00
State Veterinary Inspection,	3,500 00
Inspection of coal mines,	68,000 00
Bank Commission,	62,000 00

Salaries of Various State Officers.

Members of Board of Health,	No compensation.
Secretary,	\$2,000 00
Harbor Master,	2,500 00
Port Warden,	2,500 00
Quarantine Physician,	5,000 00
Health Officer,	5,000 00
Chief of Factory Inspectors,	3,000 00
Secretary, Department of Agriculture,	3,500 00
Deputy Secretary,	3,000 00
Zoologist,	2,500 00
Dairy and Food Commissioner,	2,500 00
State Veterinarian,	2,500 00
Chief Clerk Bureau,	1,600 00
Superintendent of Public Grounds,	3,000 00

State Reporter,	3,000 00
Assistant State Reporter,	2,000 00
Librarian,	2,500 00
First Assistant,	1,800 00
Adjutant General,	4,000 00
Superintendent of Public Instruction,	4,000 00
Secretary of Internal Affairs,	4,000 00
Deputy Secretary of Internal Affairs,	3,000 00
Attorney General,	4,100 00
Deputy Attorney General,	4,000 00
Treasurer,	6,200 00
Auditor General,	6,200 00
Deputy Auditor General,	3,000 00
Lieutenant Governor,	5,000 00
Banking Commissioner,	6,000 00
Deputy Banking Commissioner,	2,500 00

It is apparent that central control has lead to great progress throughout the State. Local boards have been organized at one time and another in six hundred boroughs and cities. Reports, partial or complete are annually received from about two hundred boards. Information from these sources has at the instigation of the State Board led to much useful legislation, whose principal result has been, however, to commit the State in theory to an aggressive sanitary policy. It is also apparent that the laws are not enforced. Central control is little more than central suggestion; and it can be nothing else until money is given the State Board with which to exercise its powers.

The first and immediate need about which there can be no difference of opinion whatever, is a larger staff for the State Board. Efficiency cannot flourish on parsimony. Our present State Health Officer has less office room and less assistance than the health officer of any of our three large cities. The statistical staff is nil, and only as a side issue are the statistics presented. The second need about which there is no dispute is the establishment of active sanitary authorities in every district of the State. Water supplies and rivers need constant supervision. The particular form which shall be given to the rural authority may be open to question. A later chapter will discuss the advisability of substituting for the present Board system, a system of health officers who enforce State law and are responsible to the State health authority.

Lastly it is apparent that the de facto State authority is the Secretary of the State Board. As such, he should be given more authority and more responsibility. The Board at best can be but an

advisory council. As such its legal relation should correspond to its actual relation to the Secretary. Finally it must seem fair to all, that those entrusted with this important work should receive adequate compensation. Cheap service is poor service everywhere and volunteer administration is always dear.





